



AMERICAN GAS

Association

MONTHLY

JANUARY 1948

VOL. 30 · NO. 1

***GAS* SIMPLIFIES THE HEAT PROCESSING CYCLE IN DETROIT AUTO GLASS PLANT**



Gas-fired dryer removes moisture from plate with 130° air-blast prior to laminating.



Plastic layer between two pieces of plate glass receives initial heat treatment during one-minute cycle through 180° Gas-fired oven.

LAMINATION of glass and plastic for windshields and side panels is a streamlined process at the Auto Glass Manufacturing Company, Detroit, Michigan. And, in the production-line, process heating is accomplished with modern GAS ovens, drying chambers, and steam generators.

This simple Gas Equipment fulfills every heating requirement for laminating glass and plastic layers. Automatic controls facilitate production scheduling and assure uniform results. Equipment maintenance is virtually eliminated because the productive flames of GAS do not require highly complex apparatus.

Wherever you need heat for processing you can install simple Gas Equipment right in the production-line. Your local Gas Company representative will assist you in selecting equipment for your specific needs.



Final sealing of plastic to glass, and optical clarifying of the plastic, are accomplished in 30-minute cycle with steam from Gas-fired 40 hp boiler (center) to autoclaves (r & l) operated at 300° and 125 psi.

MORE AND MORE...

THE TREND IS TO GAS

FOR ALL
INDUSTRIAL HEATING

AMERICAN GAS ASSOCIATION

420 LEXINGTON AVENUE, NEW YORK 17, N. Y.



President Reed's analysis of gas industry progress in 1947 rings down the final curtain on one of the most successful years on record. . . . Revenues from all classes of gas service have soared to a new alltime record, due primarily to increases in business volume. Even more indicative of the industry's good health is the fact that unlike many businesses it has been forced to carve out its gains while operating under closely regulated rate schedules which preclude any rapid adjustment to skyrocketing materials and labor costs. . . . Despite this difficulty gas companies are completing ambitious expansion plans which augur well for increased service and customer satisfaction. . . . Shortages are being combatted wherever possible with frank and factual material such as East Ohio's forceful advertising which is illustrated in this issue. . . . While reporting the activities of this great expanding industry, the MONTHLY has made some advances of its own. The overall format has been retained and a new look acquired on the inside pages using modernized Section headings and more varied treatment of features. . . . Yours for better reading and even greater achievements to report in 1948—HAPPY NEW YEAR!

JAMES M. BEALL
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Gas Industry Forges Ahead

BY HUDSON W. REED

*President, American Gas Association
President, The Philadelphia Gas Works Co.,
Philadelphia, Pa.*

THE gas industry continued its unbroken record of expansion in 1947, scoring significant gains in many directions. It served more people than ever before and its revenues from all classes of service reached an all-time peak. Reflecting current great industrial and business activity, revenues from commercial and industrial gas sales advanced more than in any previous year in the past decade, including the previously unexceeded war years. New operating methods and an industry-wide integrated research and promotional program on a scale hitherto unapproached hold great promise for 1948.

At the end of the year there were 21,590,000 customers of gas utility companies, an increase of 3.2 percent over 1946. Of this number, 10,268,000 were receiving natural gas, 8,776,000 were receiving manufactured gas and 2,374,000 were served with mixed gas. In addition, it is estimated that four million customers were being served with liquefied petroleum gas from individual tanks in territories beyond the reach of utility gas mains.

Total revenues of the utility gas industry during 1947 were \$1,407,561,000, a gain of 16.2 percent over 1946 and a greater gain than has been recorded recently in any other single year. Since 1941, total revenues have advanced 54 percent. Increases were substantial in all three major gas types in 1947 with natural gas revenues gaining 20.0 percent, mixed gas 12.7 percent, and manufactured gas 9.8 percent.

Broken down by class of service, revenues from sales to commercial consumers showed the largest gain, 19.5 percent, while residential revenues advanced 16.3 percent, and industrial revenues were 15.8 percent higher than in the previous year.

Utility sales of natural gas during 1947 were 2,503,637,000

M.c.f., an increase of 14.1 percent over the previous year. Mixed gas sales amounted to 176,286,000 M.c.f., an advance of 18.7 percent and manufactured gas rose 8.4 percent to 439,233,000 M.c.f.

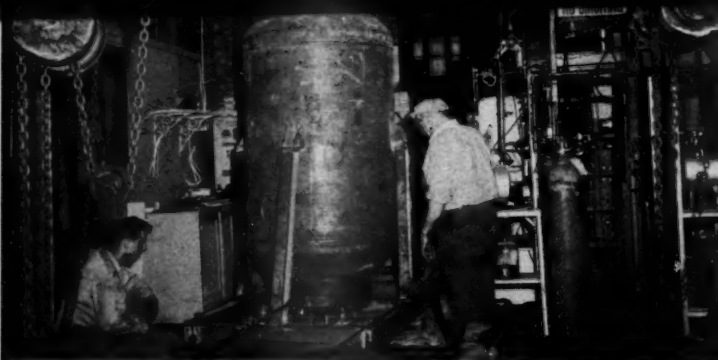
Faced with an almost insatiable demand for service, the gas utilities expanded their production and distribution systems at a pace far exceeding any previous period in their history. Construction expenditures in 1947 were approximately \$730 million, more than double the \$310 million 1946 expenditure which was formerly the all-time peak. Prior to 1946 the annual construction expenditures of the gas utility industry had never exceeded \$162 million, a fact which throws into sharp focus the accelerated pace of the current expansion program.

By far the most phenomenal expansion has been in the natural gas branch of the gas industry. Construction and operation of new facilities during the year have increased the capacity of the nation's pipeline system by nearly two billion cubic feet per day, the equivalent of about 80,000 tons of coal. Such construction added 5,370 miles of pipelines bringing the total network up to 229,000 miles, or the same mileage as total trunk line railroad tracks in this country.

More than twice as much gas pipeline construction was authorized by the Federal Power Commission in 1947 as in any previous year. When completed, the service of these new pipelines will benefit nearly 80 major cities and many smaller communities in 20 states. In all, the current natural gas expansion program has been estimated by the F.P.C. to cost in the neighborhood of \$1.2 billion and is expected to provide capacity for a total volume of interstate movement of natural gas 120 percent above the 1945 figure.

Headline news in this category was final conversion of the Big and Little Big Inch lines to natural gas, completion

● Opposite: This picturesque scene in Java taken from the jubilee book of the Dutch Indies Gas Company covering the years 1863-1938 reminds one of the familiar verse, "The Gas House Terrier," and an age when scientific measurement was unknown



Symbolic of manufactured gas and natural gas advances are these two views of (left) high pressure reactor used in A. G. A. research at Institute of Gas Technology, Chicago, and (right) pipeline crew using new type clamp to line up Biggest Inch sections preparatory to welding

of the 1,200-mile "Biggest Inch" artery from Texas to California, and approval of construction of a new 1,500-mile Texas-Detroit line. A projected line now awaiting F.P.C. authorization would bring Texas gas 1,400 miles to New York, Philadelphia, possibly Baltimore, and large areas in New Jersey. A 1,700-mile line to the Boston area of New England is also contemplated.

Manufactured gas companies along the whole Atlantic seaboard are watching with interest the possible importation of natural gas into their areas where many of them stand ready to use it as a raw material to supply larger quantities of gas with the same production and distribution facilities. Utilization of natural gas by manufactured gas companies will alleviate the critical problem of meeting expanding service demands and eliminate the necessity of expanding gas plants under present high construction costs.

Natural gas reserves appear adequate to meet these tremendous new demands for many years to come. The reserves committee of the American Gas Association estimated proved recoverable reserves of natural gas in the United States at the end of 1946 as 160.6 trillion cubic feet, an increase of 12.8 trillion cubic feet over the previous year or two and one-half times the amount withdrawn. Year by year estimates of natural gas reserves have increased until today they represent an advance of 600 percent above 1925, 160 percent above 1934 and 90 percent above 1940.

An important factor in the gas supply situation is the underground storage capacity available near the service areas to meet peak load demands, and much

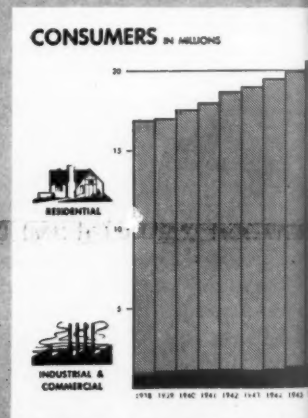
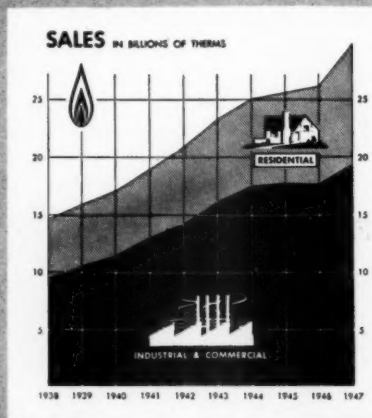
progress has been made in this direction. While most of this storage is in depleted natural gas reservoirs, a noteworthy development in 1947 was the successful storage of large quantities of gas in buried pipe nests at 2,200 pounds pressure. A recent survey disclosed that present underground storage has a total delivery capacity of one and one-half billion cubic feet of gas-per day and a maximum storage capacity of 250 billion cubic feet.

Apart from its use as a fuel, natural gas received increased attention as a raw material for the production of high octane gasoline and other chemical products. During 1947 two large commercial plants were projected to produce gasoline from natural gas by the Fischer-Tropsch method, one of which will need 64 million and the other 100 million cubic feet of natural gas a day. The larger of the two plants, located at the Hugoton, Kan. field is expected to pro-

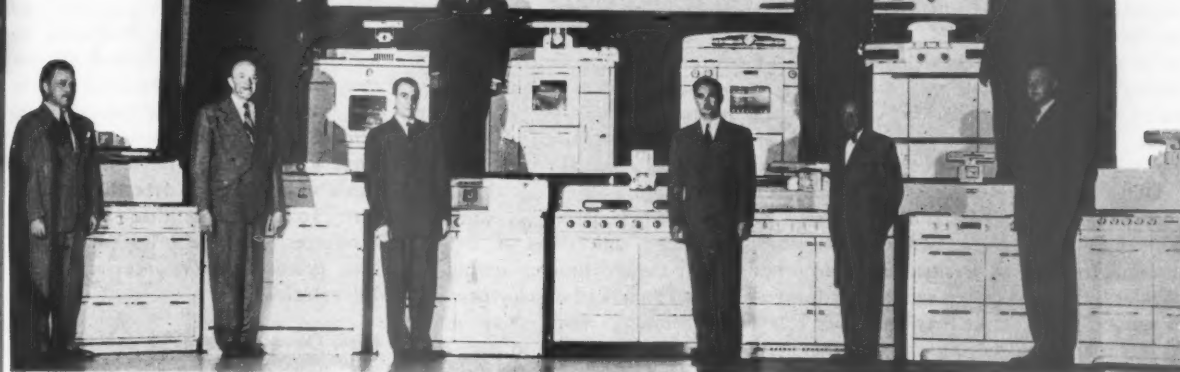
duce daily about 6,000 barrels of 80 octane gasoline, 1,000 barrels of diesel fuel and more than 400,000 pounds of organic chemicals.

While less spectacular, developments in the manufactured gas branch of the industry were substantial and dovetailed with the progress of natural gas to form a logical and progressive national fuel pattern. Sparked by the unprecedented A. G. A. gas production research program, plant capacities to meet peak loads in the manufactured gas industry increased an estimated 20 percent above the previous year. Part of this increase resulted from the installation by gas utilities of LP-gas plants for augmenting peak load supplies.

Other companies are now installing or planning to install a new oil gas process which will make a high B.t.u. gas for distribution alone or interchanged with natural gas. This latter development not only will greatly in-



THE NEW GAS RANGES... ARE REALLY NEW!



Eleven makes of modern automatic gas ranges built to "CP" standards on display at Western tie-in meeting with "Gas Has Got It" drive

crease production and distribution capacities of manufactured gas companies but will also make it easier for them to convert to natural gas when and if it becomes available in their territories.

Gasification of coal received added impetus in 1947 with two outstanding developments. The first was inauguration of a mammoth research and development program by the Pittsburgh Consolidation Coal Co. and Standard Oil Development Company. Erection of a pilot plant costing \$300,000 was begun by the former company to consume 50 tons of coal a day and produce daily about 2,400,000 cubic feet of gas suitable for synthesis into a high B.t.u. gas

and liquid fuels. Following a year's operation of this pilot plant, a commercial plant costing possibly \$120 million and yielding 96 billion cubic feet of gas a year is expected to be built within 25 miles of Pittsburgh.

The other project involved this country's first experiment to determine the possibilities of underground gasification of coal. The joint 50-day project conducted at Gorgas, Ala., by the Alabama Power Co., with the cooperation of the Bureau of Mines, determined that unmined coal could be burned successfully to produce gas under controlled conditions.

Despite continued shortages of steel and other critical materials, high levels of appliance production are reported by the Gas Appliance Manufacturers Association although total production is still far below the huge potential market. Outstripping all other categories, sales of automatic gas water heaters totaled 1,800,000 units or a half-million more than in 1946, the previous record year.

Gas range production during the year reached two and one-quarter million units which was equal to the previous peak established in 1941. Any easing of the tight steel situation will see this production leap sharply in 1948 as gas range manufacturers have increased their production facilities by more than 100 percent of pre-war capacity.

Domestic gas refrigerators, heavy duty commercial appliances and indus-

trial equipment also registered marked gains over 1946.

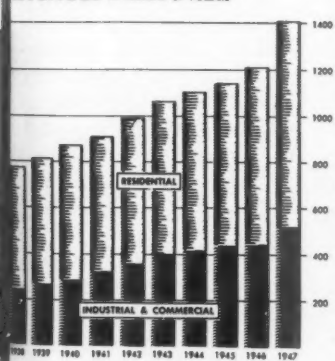
Lagging behind the other appliances as a result of continued restrictions in certain territories was the sales of gas house heating equipment. Production of central heating appliances dropped to 750,000 units during the year. An improved gas supply in 1948 coupled with a concerted drive by the national and regional gas associations to upgrade existing heating equipment is expected to result in a substantial increase in this type of business in the next 12-month period.

While there were many refinements but relatively few radically different design changes in gas ranges marketed during 1947, previews of 1948 models show a number of new style trends as well as improvements in such performance features as automatic operation. Perhaps the most startling departure from recent trends, dictated by popular demand, is the return of the high oven and broiler necessitating some modifications in the streamlined table-top design.

New in home appliances is a table-top barbecue-broiler that can be attached in the kitchen or used outdoors with bottled gas. About the size of a portable typewriter, the broiler has four removable skewers that rotate over open gas flames. It has a heat rating of 3,200 B.t.u. per hour, turns out a meat course for six in three or four minutes.

Noteworthy was the increased use of

REVENUES IN MILLIONS OF DOLLARS



kitchen ventilation equipment and also the widespread interest in the self-ventilating space heaters. These space heaters undoubtedly will continue to make an important contribution to convenient, safe heating where no flues are available in locations such as remodeled private homes converted to multiple apartments, stores and offices using unvented equipment now, banana ripening rooms, tourist courts and similar applications.

Other recent appliances are the gas home incinerator and the laundry dryer. Although both were available before the war, the dryer has gained increased popularity because of the rapid growth of automatic home washing machines. In this connection the expansion of the self-service laundry has been an important factor. A new heat reclaimer has been developed for self-service laundry use which cuts water and gas requirements 30 percent below levels needed without such a device.

Early in 1947 the gas industry found that it was desirable to revise its standards for conversion burners. Although it was necessary to reduce sales effort in this field due to curtailment moves, the

change in appliance standards will have a beneficial effect and will result in greatly improving gas conversion burner performance in the future. A further step toward mechanical operation of this and other types of gas heating was the perfection of a system which gives complete automatic control of gas-fired heating units, eliminating the necessity for igniting and turning off pilots at the beginning and end of the heating season.

All-year air-conditioning, where a single compact unit cools as well as heats, made marked progress during the year. After 13 years of development and testing, including work done under actual operating conditions in more than 100 homes, units for small or large homes are in full production. More than 1,200 of the advanced-type units were shipped in 1947. Further impetus to this market was seen in the recent announcement of a new cooperative A. G. A. research project at the University of Illinois to improve air distribution systems for all-year gas air-conditioning, thereby reducing costs without sacrificing performance.

Operations of the A. G. A. Testing Laboratories, which since 1925 have been a vital factor in maintaining high gas appliance standards, throw considerable light on appliance activities and trends. In the year just completed the Laboratories' services increased 40 percent, exceeding even the level of the war work years by approximately 20 percent. Some 3,000 models of appliances were submitted for testing, an increase of 50 percent over the previous year. To date more than 31,000 gas appliances and accessories have undergone practical performance tests at the Laboratories.

New Developments

New developments in appliances submitted include several innovations. In the space heater field, designs were submitted incorporating in-the-wall-construction employing outer wall flue discharge and introduction of outside air for combustion. Unit heaters for the first time employed horizontal instead of vertical tube construction in small types. Water heaters and accessories of more streamlined design appeared. Several clothes dryers and incinerators of new design were tested.

Reaffirming its faith in cooperative industry-wide action, the gas industry in 1947 approved the continuance of the great promotion, advertising and research program conducted by A. G. A. which has been the spark plug of the industry's progress since 1944. The new plan calls for an expenditure of nearly \$5 million in these activities in the next three years. In the past three years, approximately the same amount has been contributed to the industry's so-called PAR program, an amount sufficient to put A. G. A. first on a list of 64 trade associations in the volume of such special activities undertaken cooperatively.

Research—the fourth dimension of industry—has been under the coordinated PAR plan, extensive, continuous and resultful. More than one-half million dollars have been spent during the past three years for gas production research. This work involves a long-range program developing fundamental data on the production of gas through use of various sources of gaseous energy and the application of such data to development of new or modification of existing processes. (Continued on page 45)

Range Firms Commend A. G. A. Program

● Appreciation of the American Gas Association's leadership and efforts in focusing national attention on the advantages of the modern automatic gas range is expressed in the following resolution which was unanimously adopted by the Domestic Gas Range Division of the Gas Appliance Manufacturers Association, A. B. Ritzenthaler, chairman, and transmitted to Hudson W. Reed and H. Carl Wolf, A. G. A. president and managing director, respectively:

"Whereas in previous years, the American Gas Association has been unceasing in its efforts to bring to its customers' attention the advantages of modern gas ranges as a vehicle which will properly interpret gas as a fuel for cooking; and

"Whereas, in the fall of 1947, the American Gas Association has greatly intensified its efforts to inform the homemakers of the United States and Canada of the advantages and features of modern automatic gas ranges; and

"Whereas the American Gas Association and its member gas utility companies will continue, in 1948, to promote actively the advantages of modern gas ranges, through its national and local advertising and promotions; and

"Whereas the American Gas Association through its consumer studies, promotional programs and national advertising, has provided outstanding leadership and guidance to gas utilities and gas range manufacturers in their continuing efforts to provide the homemaker with easier cooking; cooler cooking; time, food and money-saving gas cooking appliance;

"Be it therefore resolved that: The Domestic Gas Range Division of the Gas Appliance Manufacturers Association extend its sincere thanks to the American Gas Association and pledge the whole-hearted support and assistance of its members in achieving the objectives so ably defined and so aggressively being pursued by the American Gas Association."

Certification Program



Launched To Aid Architects and Builders

SCIENTIFIC PLANNING



AN important prestige and merchandising vehicle for architects and builders, as well as a reliable buying guide for prospects interested in home-buying, building or remodelling, is now available in the New Freedom Gas Kitchen Certification plan recently initiated by the American Gas Association.

For the past three years, the Association's national advertising has told consumers of the modernity, beauty and efficiency of modern automatic gas kitch-

ens through its New Freedom Gas Kitchen Campaign. In support of this program local gas utility companies serving more than 12 million families are supplying kitchen planning assistance through architects and builders or directly to consumers.

As a natural outgrowth of the present campaign, the gas industry now offers a definite merchandising plan under which four national requirements have been set up (*Continued on page 46*)

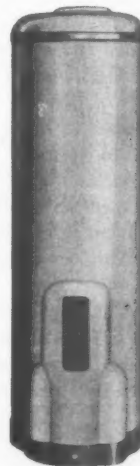
AUTOMATIC GAS RANGE BUILT TO "CP" STANDARDS



AUTOMATIC GAS REFRIGERATOR



AUTOMATIC GAS WATER HEATER



Reaching Young America

BY ELEANOR MORRISON

Home Service Director, Michigan Consolidated Gas Co., Grand Rapids, Mich.

More and more gas companies are learning that home service activity can effectively reach tomorrow's citizens and customers today. Eleanor Morrison outlines below how one representative home service department developed an effective program for teen-agers. Some of the ingenious promotions which home service departments use to get today's "slick chicks" cooking with gas are shown in the following illustrations.

REACHING young America has always figured prominently in program plans of home service departments for we are well aware of the axiom—"As the twig is bent, the tree's inclined."

In the past few years, one group of young America has received considerable attention in the national spotlight—the "teen-agers". Communities have become concerned about recreational activities and facilities for this age group. Leaders in the publishing field have found it profitable to bring out magazines devoted to teen-age interests—*Glamour*, *Charm*, *Calling All Girls* and *Seventeen*—to mention a few. Up-and-coming department stores now feature teen-age and college fashion boards which put on style shows and act as fashion advisers during vacation time.

Why all this activity on behalf of the teen-ager? Simply because reaching tomorrow's citizen and customer with in-

teresting programs today will pay dividends tomorrow.

To interest teen-agers in cooking with gas, programs developed by home service departments have always centered around things current in the news of the day. For instance, during the war, teen-agers gained a sense of importance by joining the "Victory Kitcheneers", or attending "Food for Fitness" classes, or assisting in the conservation program sponsored by home service. It was *the* thing to do.

Today, of course, such programs are as out-dated as last year's dress as far as teen-agers are concerned. Therefore

we must think up new ways of telling our story. Tying in with the recreational interests of teen-agers provides us with an excellent means.

When the executive secretary of the Campfire organization in Grand Rapids came to discuss plans for our cooperative program last year, she said, "What can we do for the older girls? They are not interested in home-making honors, much less in preparing a meal for their family or doing the marketing."

Those of you with teen-age daughters could no doubt substantiate that statement and enlarge upon it. The enthusiasm of the ten to 12-year-old group



Michigan Consolidated Gas Company's Home Service Department has organized a teen-age board of girls' club and high school representatives to meet four times a year and make plans for a four-page mimeographed publication, "Teen Talk." Demonstrations which appeal to high school girls are "Date Tricks in the Kitchen" and "Mirror Magic"

Presented at Home Service Pound-Table, October 7, 1947, during A. G. A. Convention, Cleveland, Ohio.

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in wanting to learn to cook seems to do a disappearing act a few years later.

Let's look at the teen-ager for a minute. What is she interested in?

Rating with the gang, and particularly with the boys; how she looks, and what she will do in those few years between school and marriage, are probably some of her basic interests. Beginning with these activities, it wasn't so difficult to plan a program of demonstrations and talks which proved attractive to many teen-agers in Grand Rapids last winter.

"Date Tricks in the Kitchen" was a demonstration developed by the gas company to entice these girls to put on the family apron, go into the kitchen and whip up a few delectable dishes. It aimed to arouse interest in kitchen parties—cooking up popular and unusual dishes for after-game conclaves, jive sessions or other get-togethers.

The young graduate home economist in our home service department who conducted the demonstration peppered it thickly with teen-age phraseology. She said—

"They would really be in the groove if they came up with something sharp and truly new."

"Try dazzling the Hep-Harrys with your culinary ability."

"The gal who is on the beam knows that the male ego is flattered by lending a hand in the domestic domain."

"You'll be really 'cooking on the front burner' in the estimation of the gang if you invite them to your home and whip up a lot of luscious food."

But such jargon soon becomes out of date. While it went over big, we extended it to the Y-teens—the high school group of the YMCA. Then other high school club groups and home economics classes called to arrange for their groups to have the demonstration put on for them.

Then we went on to their second interest, figuring that if food did not interest them, then how to achieve good looks might. We offered a second demonstration, "Mirror Magic."

This was a grooming demonstration patterned after the program developed by Kathryn Barnes of the Equitable Gas Co., Pittsburgh, but on a much smaller scale. At the close of the year we arranged a "Home Economics Career Day



Six graduates of recently concluded teen-age "What's Cookin' Classes" sponsored by the Home Service Group, New Orleans Public Service, Inc., are shown at upper right receiving their graduation diplomas from Sarita Alba, home service advisor. Samples of the diploma, recipe book, teen-age what's cookin' buttons and shoulder patches which are presented to graduates by Vivian Marshall and her staff are included in the above display

Program" for all girls from the various groups contacted. This took the form of a radio interview, with a girl in charge of women's programs at one of our local stations acting as master of ceremonies. Eight different fields of home economics were represented. In addition, each school was sent a package of booklets and pamphlets on various careers in home economics.

With this program and the usual demonstrations on care and use of the range and refrigerator, plus illustrated talks on kitchen planning given for the home economics classes, we felt that we had the beginnings of a teen-age program which had greater possibilities.

Although a utility does not have as

many tangible items of interest to high school students as does a department store, our home service staff was interested in experimenting with and developing this year a larger teen-age program, on the theory that nothing ventured, nothing gained.

To try to reach as many students as possible, we decided to organize a teen-age board made up of representatives of the various girls' clubs and organizations, as well as of the senior home economics classes in our city and suburban high schools.

We shall entertain this board four times a year to make plans for a four-page mimeographed publication, "Teen-Talk," which we are publishing and to

see "Previews" of a program featuring demonstrations which will be available to their clubs upon special arrangement.

The publication "Teen Talk" will feature recipes appropriate to the season for their informal get-togethers and parties. One column will be devoted to careers in home economics. We hope it will play a small part in interesting more girls in home economics so we in turn can interest them in home service.

Another column, "Glamour Spotlight", will feature grooming tips and care of clothes, thus giving us an opportunity to tell our hot water story.

believe a program consistently geared to their interests will reach more teen-agers.

Other home service departments have seen the need to do something for this section of young America and are planning similar programs to reach teen-agers. Margaret Holloway, home service director, Consolidated Gas, Electric Light and Power Co. of Baltimore, inaugurated a junior hostess program last summer. Thelma Holmes, Alabama Gas Co., sponsored a series of cooking classes in Teen-Age Hall—a community recreation project in Montgomery. No doubt there are countless others developed by home service departments to

our gas industry in the community as did the nutrition and conservation programs during the war.

Teen-agers are in the news. Let's be in there with them!

Potential sales are possible today as well as in the future for anyone who has teen-agers in her home knows how they love to "shoot the breeze" about what they learned in school or did on a field trip or what happened in a meeting attended. Their influence on present day sales should not be dismissed lightly, even if the big sales come when the "slick chicks" of today become homemakers a few years hence.



After success of its 1944 playlet "Look Who's Cookin'!" Southern California Gas Company's home service troupers are preparing for high school audiences a second comedy entitled "Platter Patter." Shown above are three all-gas kitchen scenes and cover of a new recipe book

This publication will be available to high school girls through their representative on the teen-age board and to others through our Home Service Center. One of the department stores has offered to give it publicity on a teen-age radio program.

The "Previews" or 15 minute demonstrations to be given at the board meetings, will be excerpts, so to speak, from the three demonstrations we shall offer for club programs. "Cooking on the Front Burner" will feature foods; "Mirror Magic", grooming, and "The Beauty Seven", good nutrition.

Our program in Grand Rapids is like a child newly born. We are not sure how it will develop and what it may be like a year from now. The teen-agers may have some decided notions of their own as to the development of this program but if such ideas stimulate interest, all well and good—even if we have considerable growing pains. We

meet their particular community's need.

Serving young America in ways that tie in with better recreational programs that communities are sponsoring for these young people will win laurels for

If we in home service make friends now through programs of interest to teen-agers, we will be "in the groove" with the many potential customers of tomorrow.

Freedom for Industry

● American industry, which for so many years remained aloof from the American people, either through arrogance or ignorance, has for the past 15 years done a most remarkable job of hiding its light under a bushel. Its enemies, on the other hand, have waxed eloquent and have made serious inroads on the thinking of the American people who have come to lay their past economic ills directly on the threshold of business and that currently maligned and much misunderstood doctrine of free enterprise.

One basic idea stands out above all others in any discussion of a competitive

capitalism. That idea is in reality the keystone of our society. It is freedom—freedom to work as we choose, freedom to compete with whom we please, freedom from coercion by any man or group, and, most important of all, freedom from undue interference and regulation by government. I submit that government regulation constitutes the most important threat to our economic freedom, because inherent in national government, and ours is no exception, is the latent power to control and dominate every phase of our lives.

—F. M. Carlson,
Economist, Dresser Industries, Inc.

LP-Gas Sales

Rise in 1947

Figures show unprecedented demand by public and utilities

BY R. W. THOMAS* AND
K. W. RUGH†

Phillips Petroleum Co.,
Bartlesville, Okla.



R. W. Thomas

THE liquefied petroleum gas industry continues its rapid growth with sales within the past three years having more than doubled to an estimated total volume in 1947 of 1,845,000,000 gallons.

Estimated increase in volume sold in 1947 over 1946 is almost equal to the total volume sold in 1941, the last year of normal activity preceding World War II. By no means

was the market demand for LP-gas satisfied during the past year. The volume sold was limited by a combination of factors such as insufficient production of appliances and utilization equipment, shortage in transportation facilities,

and inability to obtain necessary materials to construct additional facilities for production of LP-gases. A large unfilled demand for these products continues to exist and cannot be fully satisfied until such shortages are overcome.

Estimated increase in the volume of

* Manager, Research and Development Department.
† Manager, Philgas Division, Sales Department.



Tank car loading racks such as this one play important part in the LP-gas industry

LP-gas sold for domestic purposes in 1947 over that sold in 1946 exceeded the industry's total sales for domestic use in 1941. It is estimated that sales for domestic purposes in 1947 will exceed one billion gallons—more than the industry's total sales for all uses in a year as recent as 1944 and almost equal to the total volume sold by the industry for all purposes two years ago.

These figures indicate the tremendous demand for LP-gas for homes, institutions and commercial establishments situated beyond the gas mains. It is estimated that at the close of 1947 there were approximately 4,500,000 homes using LP-gas for household purposes, indicating that approximately 20 percent of the homes using gas are being served by the LP-gas industry.

Utilization equipment and appliances continue in greater demand than can be supplied by manufacturers, but nevertheless startling increases were made in appliance sales to LP-gas users in 1947.

It is estimated that approximately

four times as many automatic water heaters were sold for LP-gas in 1947 as in 1946. Probably 20 percent of the total automatic water heaters made in 1947 went to LP-gas users compared with approximately ten percent in 1946.

Indications point to twice the sales volume of household LP-gas refrigerators in 1947 as in 1946. The demand for these appliances was far from satisfied even though the number sold was doubled over the previous year.

An estimated 25 percent of all the gas ranges manufactured in 1947 were installed for LP-gas customers.

Increasing acceptance for LP-gas for house heating is indicated by the estimate that better than 15 percent of the floor-furnaces manufactured in the country are made for LP-gas. The number of central heating units connected to LP-gas does not represent a large portion of the total manufactured, however, the demand is increasing each year.

Because of increases in all elements of operating costs and in equipment



Example of mass production methods which are used in filling cash-and-carry type cylinders

costs it has been necessary generally for the industry to increase the charges to customers for making new installations. In spite of these increased charges distributors must invest more capital per new customer than formerly. Increased amounts of capital per customer are, therefore, required by the operating companies.

Higher costs in all phases of the business have resulted in the industry generally raising gas prices to consumers. Since the inception of the household use of gas, greater use has resulted in lowered costs due to increased operating efficiency and to greater saturation of customers. During the past year the upward spiral of costs has made necessary installation charge and gas price increases.

Great strides have been made in increasing the storage capacity of installations for homes using LP-gas for house heating, necessity for which was indicated by the inability of the industry to immediately supply the winter peak requirements of customers.

There has been considerable unfilled demand for new industrial installations. Some increase in consumption of LP-gas in existing industrial installations has taken place, however most of these manufacturers have long been operating at near capacity.

Many industrial concerns normally using either manufactured or natural gas are installing "standby" storage of LP-gas to satisfy their industrial fuel requirements during winter months when the heating load demand experi-

enced by gas companies exceeds their gas manufacturing or transmission capacities. Industrial use of LP-gas for 1947 is estimated at 285 million gallons, an increase of 11.6 percent over consumption for the same use in 1946.

Use of LP-gas by utilities is estimated to have increased 55.8 percent in 1947 over the previous year's consumption with the greater portion of this increase attributable to larger utility companies who are using LP-gas to a limited extent continuously through the year to offset a shortage in supply of either manufactured or natural gas. Their principal demands have been to fill large numbers of 30,000 gallon tanks maintained as "standby" storage to meet winter peak load heating requirements.

Interest by utilities in LP-gas during the past year has been unprecedented and from all indications will continue. Utilities are finding that it is less expensive to install LP facilities and use LP-gas for augmenting their present supply or for standby than to install additional manufacturing capacity or pay higher demand charges to the pipeline companies for natural gas supplied during peak demand periods only.

Because of inability of the LP-gas industry to make firm commitments for additional sales, there was a relatively small number of small-town manufactured gas plants converted to LP-gas exclusively this past year. At the close of

1947 approximately 330 small town gas plants were using LP-gas exclusively for distribution through the mains.

Use of LP-Gas by the chemical industry continues to increase, principally for conversion to chemical intermediates. To guarantee obtaining these raw materials, new chemical plants are locating adjacent to LP-gas production points, resulting in delivery by pipeline to these plants of much LP-gas in the liquid or gas phase. It is estimated that 415 million gallons were consumed by the chemical industry in 1947, an increase over 1946 of 34.9 percent.

Individual companies, national and state associations and regulatory authorities have been active in the development of additional safety standards and in promoting safe practices. National Board of Fire Underwriters' Pamphlet No. 58 entitled "Standards for the Design, Installation and Construction of Containers and Pertinent Equipment for the Storage and Handling of Liquefied Petroleum Gases as Recommended by the National Fire Protection Association" continues to be accepted by the industry and by regulatory bodies as a code of safe practices. This pamphlet is now the basis for laws or regulations in 35 states.

Amount of LP-gas exported continues to represent approximately three percent of this country's sales. The largest volume of these exports moved to Canada and Mexico. During the past year a

Detroit Gas Gets New LP Facilities



Part of huge new liquefied petroleum gas plant which will help to safeguard Detroit customers of Michigan Consolidated Gas Co. from shortages during peak demand periods for gas

Year
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MARKETED PRODUCTION OF LP-GAS

Year	Total Sales		Distribution—(Thousands of Gallons)							
	Gallons (in thousands)	Percent Increase	Domestic (1)	Percent Increase	Industrial and Miscellaneous (2)	Percent Increase	Gas Manufacture	Percent Increase	Chemical Manufacture	Percent Increase
1922	223	—								
1923	227	24.4								
1924	376	36.0								
1925	404	7.2								
1926	465	15.2								
1927	1,091	134.6								
1928	4,523	31.6	2,600	—	400	—	1,500	—	—	—
1929	9,931	119.6	5,900	126.9	1,500	275.0	2,500	66.7	—	—
1930	18,017	81.4	11,800	100.0	2,200	46.7	4,000	60.0	—	—
1931	28,770	59.7	15,295	29.6	7,172	226.0	6,303	57.6	—	—
1932	34,115	18.6	16,244	6.2	8,167	13.9	9,703	53.9	—	—
1933	38,931	14.1	16,626	2.3	13,987	71.3	8,318	14.3	—	—
1934	56,427	44.9	17,681	6.3	32,448	132.0	6,298	24.3	—	—
1935	76,855	36.2	21,380	20.9	47,894	47.6	7,581	20.4	—	—
1936	106,652	38.8	30,014	40.4	67,267	40.4	9,371	23.6	—	—
1937	141,400	32.6	40,823	36.0	62,610	(3)	11,175	19.3	26,792	—
1938	165,201	16.8	57,832	41.7	62,694	0.0	12,386	10.8	32,299	20.5
1939	223,580	35.3	87,530	51.4	93,723	49.4	15,435	24.6	26,892	16.7
1940	313,456	40.2	134,018	53.1	124,482	34.5	20,285	31.4	34,671	29.0
1941	462,852	47.7	220,722	64.7	172,669	38.6	25,255	24.5	44,206	27.5
1942	585,440	26.5	303,857	37.3	197,149	14.3	31,366	24.2	53,038	20.0
1943	675,233	15.3	344,962	13.7	237,396	20.2	37,519	19.6	55,356	4.4
1944	898,071	33.0	445,617	29.0	254,590	7.3	45,879	22.3	151,983	175.0
1945	1,067,979	19.0	533,262	19.7	256,577	0.8	53,849	17.4	224,291	47.5
1946	1,415,840	32.6	766,150	43.7	255,375	—0.5	86,660	61.0	307,655	37.1
1947	1,845,000	30.3	1,010,000	31.8	285,000	11.6	135,000	55.8	415,000	34.9

Sale of liquefied petroleum gas confined primarily to bottled gas business prior to 1928

- (1) Household use plus other requirements by these customers such as irrigation pumping, tractor fuel, flame weeding, chicken brooding, and similar uses. Included also is LP-gas sold by domestic distributors but used for industrial purposes, internal combustion engine fuel and for gas manufacturing purposes.
- (2) Includes LP-gas sold for fueling internal combustion engines.
- (3) Not comparable due to segregation of chemical manufacturing.

Remarks: In this table total sales for all years except 1947 were obtained from U. S. Bureau of Mines reports. Distribution for the years 1931-1946, inclusive, was obtained from the same source. All other volumes were estimated by the authors. Total sales volume includes all LP-gas (propane, butane, and propane-

butane mixtures) when sold as such. Until 1944 the sale of pentane when sold for any purpose other than motor fuel blending was included. Since then it has been excluded. It does not include butane when blended with heavier petroleum fractions for motor fuel purposes. Inter-company sales transactions such as purchases of LP-gases by one company from other companies and resold as LP-gases have been eliminated in order to avoid duplication of sales figures. The data do not reflect sales of LP-gases used directly by the producer at the point of production for fuel, polymerization, solvent de-waxing, etc. Neither do the figures include sales of hydrocarbons to plants manufacturing synthetic rubber or aviation gasoline or their components.

dry cargo ship was converted to a propane tank ship which is scheduled to carry propane from the Gulf to the eastern seaboard. There is also an increased interest in the use of skid-tanks as deck cargo for LP-gas export. Some of the present export business is moving in I.C.C. cylinders.

A tremendous increase was noted in the number of "trailer homes" which installed LP-gas equipment in 1947. While many of these installations were placed on mobile trailers used for pleasure and outing trips, the great majority were used to supply continuous gas service for ordinary domestic use in "trailer homes" which for the moment are stationary and which are so used because of the widespread housing shortage.

There is a huge potential supply of propane existing in gas streams but unrecovered at the present time. To segregate any significant volume of this potential supply requires much additional equipment costing considerably more than the extraction facilities which have heretofore been installed.

In the case of propane obtained from natural gas sources, increased quantities are being secured generally by expensively increasing the recovery efficiencies of the extraction units to obtain a greater percentage of the propane available in the streams being processed. Frequently the added investment per gallon is as much as three times the amount invested in the past for facilities designed for lower recoveries.

In the case of material secured from refineries it is usually necessary first to replace the extracted material with fuel oil or natural gas since the unextracted LP-gases are generally consumed as fuel at the refineries. It is also necessary generally for the refinery to install new extraction and purification equipment in order to produce specification products.

Increased cost of additional production facilities today is magnified by rising costs in both material and labor. All these factors have contributed materially to the increased cost of propane. Butane has been rather completely recovered at most plants for several years.

New Freedom Plans To Aid Tokyo Kitchens

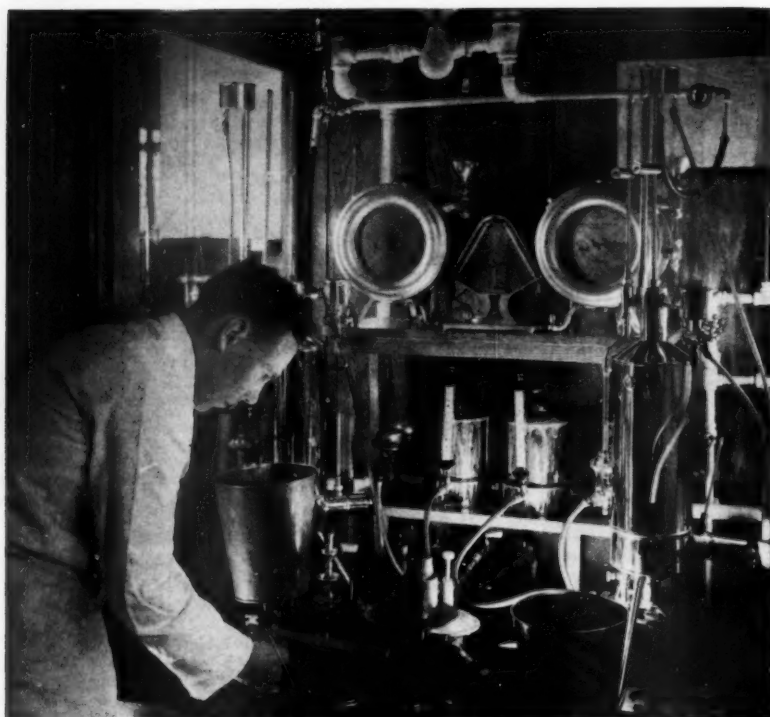
A CALL for help in replanning Tokyo kitchens has been received by Robert Calrow, director of the Minneapolis Gas Light Company's Kitchen Planning Department.

The request comes from Northwest Airlines, currently in the processes of remodeling Japanese rental properties for their employees in Tokyo.

According to Francis Meisch, architect for the airlines, kitchens in Tokyo homes spell double trouble for American housewives as they are kitchens in name only.

Often no larger than 6 1/2 feet square, the average Japanese kitchen has a stone floor and contains no tables, chairs or cabinets of any kind. Food is cooked in pots set in glazed clay braziers. In contrast to the hot-soapy-solution-and-plenty-of-hot-rinse-water which characterize the American method of washing dishes, in Japan dishes are generally just rinsed under a cold water tap.

To help overcome some of these problems, the Minneapolis Gas Light Company's Kitchen Planning Department has presented the airlines with a complete packet of New Freedom Gas Kitchen plans, in hope that they will help make life for the American housewife in Japan more enjoyable.



Determining the heat value of test gases under project conducted at A. G. A. Laboratories

Fact Finding

For Sound Standards

A. G. A. requirements investigations help to keep standards in step with advancing technology and experience

BY H. J. HENSE

American Gas Association Testing Laboratories

REQUIREMENTS investigations, sponsored and wholly financed by the American Gas Association, provide the technical network of factual information needed for intelligent formulation of gas appliance standards. In effect they are the backbone of the Laboratories program of standardization, testing and approval of gas-consuming appliances, playing a dual role in the

all-important job of certifying such equipment as safe, satisfactory in performance and substantial and durable in construction.

Not only vital to the constant revision of standards in keeping with advancing technology and experience gained in the field, these requirements investigations provide the technical medium through which the Association's Approval Requirements Committee and its 31 subcommittees are able to determine performance levels for any specific type of equipment.

Adoption of proper test methods and

maintenance of up-to-date national appliance standards consequently depends to a great extent upon competent prosecution of such investigations. Accompanying illustrations show some of the many projects conducted at the A. G. A. Laboratories for various requirements subgroups in connection with current approval requirements activities.

A thorough study of the ability of various types of burners to stand up in service under temperature conditions encountered recently was completed. Within the past several years many new designs have come into use. Since some of these performed very well in service, while others were less satisfactory, the subject of durability was probed for the purpose of establishing more comprehensive requirements on this feature.

On the basis of these studies a special committee of the range group has recommended strengthening the durability test of range burners by requiring the use of metals or alloys with melting points of a minimum of 950 degrees for top burners and 1450 degrees for oven and broiler burners.

A report on burners fabricated from materials other than cast iron, submitted to the central heating group, indicates that the proposed adoption by that group of a 1450 degree melting point for central heating burners would be highly desirable. Since water heater and space heater burners were also examined during the investigation, distribution of the report to those groups has been arranged as well as to the unit heater subcommittee which is also interested.

Extensive studies of the performance



Dual oven type combination range for which individual approval standards are now available as a result of extended investigation

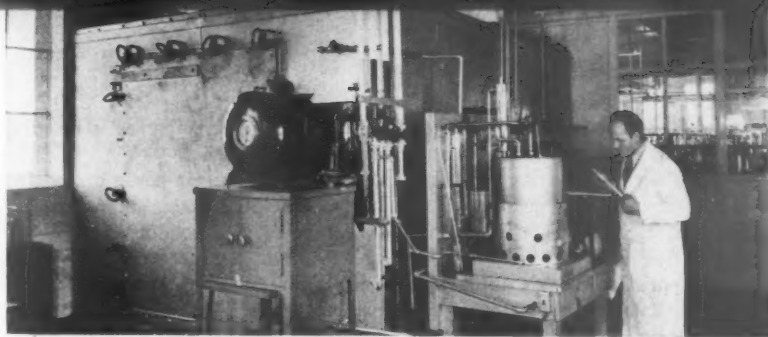
characteristics of water heaters, space heaters and ranges, operated on butane-air gases of various heating values ranging from 525 B.t.u. to 1400 B.t.u. have been carried out and reported separately to those committees. The data secured make possible the formulation of new test procedures for approval of appliances for use with such gases over the entire range of heating values generally employed. The water heater and space heater subcommittees have already formulated tentative test methods and action is pending by the range subcommittee.

Re-examination of the thermal efficiency test for warm air furnaces, along with investigation of possible alternate test methods less involved and less time consuming than the present Thomas meter method, is another important approval requirements study recently reported. It was found that efficiency may be satisfactorily determined in most cases from flue loss and jacket loss data.

The central heating subcommittee has recommended this method be adopted with the Thomas meter used only in critical situations. Experimental use of an orifice meter to measure outlet air flow indicates that this method may replace the Thomas meter. It would not only simplify test procedures but is believed to be superior, since it is not limited to the measurement of air at a comparatively small temperature rise above that of the room. In addition it takes into consideration design and construction of the furnace jacket since outlet instead of inlet air is measured.

Test Revision

Revision of the "closed room" test for determination of the operation of space heaters under conditions of diminished oxygen supply likewise is under consideration. Extensive investigation of test methods indicates that in order to equalize differences in the test room caused by the effect of temperature, when heaters of widely varying input rates are tested, burning periods of variable length should be provided so that the oxygen concentration within the closed room will be identical in all cases at the end of the test. A proposed new procedure has been prepared. This study also demonstrated that no other type of currently specified test indicates combustion characteristics when the am-



Test undertaken at A. G. A. Laboratories to determine and record the oxygen concentration in a closed room which contains a space heater operated under experimental conditions



Staff member measuring static pressure of unit heater under various test conditions



Recently reported was a study on experimental simplification of furnace efficiency (see above) using orifice meter to measure outlet air flow in place of equipment mounted at right



Water Heater Requirements Subcommittee (l. to r. around the table): C. L. Elliott, E. J. Nelson, R. C. Gregg, C. H. O'Donnell, T. H. Jones, R. M. Conner, H. W. Geyer, chairman; E. L. Hall, K. R. Knapp, Harold Massey, E. J. Horton, R. B. Barger, John Davidson and T. J. Tobey. In the background: H. L. McPherson, R. E. Cramer, C. A. Thorp, Laboratories

bient atmosphere is deficient in oxygen. Consequently its retention is necessary.

Investigation of operating conditions of unit heaters and consequent necessary requirement changes are charted in a study of that subject. Over-rating of burners, restriction of air throughput and varying inlet air temperatures were investigated and methods of preventing continuous operation under conditions causing rapid corrosion detailed. The unit heater committee has proposed a top heating element temperature of 805 degrees above room temperature except for some alloys which have a greater resistance to heat. Controls to shut down

the unit would be employed in case this limit was exceeded.

Another important phase of requirements activities, cutting across the entire program of the different subcommittees, is the current program of simplifying, revising and coordinating the various sets of standards. Revision and simplification of range requirements represents the principal accomplishment to date, the new text representing a reduction of approximately 25 percent from that now in effect. Also undergoing revision and simplification are standards for space heaters, water heaters and unit heaters.

Technical information of a reliable nature is not only necessary for most of the steps taken but likewise often is vital to the interpretation of requirements by the various committees. Design changes, introduction of new ideas or features, and development of new types of equipment may require new or modified requirements in some instances while in others it may involve merely committee interpretation of the intent of certain features currently in effect.

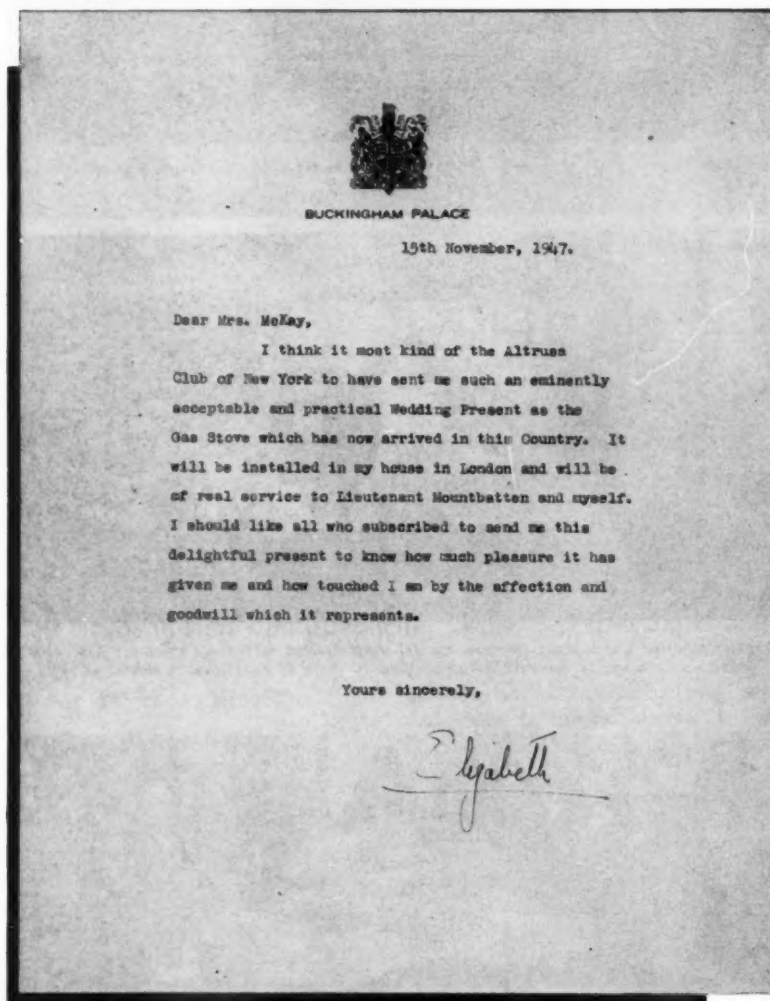
Supervises Standardization

The Approval Requirements Committee which supervises all gas appliance standardization activities passes upon all requirement changes adopted by its subgroups for specific appliances. Nearly 250 authorities and technical experts serve on this committee and its subcommittees. The main body is also a sectional committee of the American Standards Association, the leading agency for the development of national standards. Consequently, requirements approved by this group and sponsored by the A. G. A. are passed on to the A.S.A. for adoption as American Standard.

Members of committees are chosen from the gas industry with an equal number of representatives from utility companies and appliance manufacturers. Representatives of such organizations as the National Bureau of Standards, U. S. Bureau of Mines, U. S. Public Health Service, American Institute of Architects, American Home Economics Association and many others are included in the membership of the Approval Requirements Committee. They accordingly participate in the formulation and adoption of standards, pointing up the interest of consumers, government organizations and other well known groups outside the gas industry.

The over-all effect of this program has been the maintenance of a decidedly creative process of standardization and simplification of gas appliances, benefiting utilities, manufacturers, and consumers alike by lowering production and distribution costs, cutting maintenance and repair bills, and making possible greater value and better service. United support of the gas industry as well as other cooperating agencies have been largely responsible for the accomplishments of this program and the wide recognition given it by the gas-consuming public.

Princess Grateful for Gas Range



Letter from Princess Elizabeth of England to Mrs. M. Victor McKay, president, New York Chapter, International Association of Altrusa Clubs, Inc., thanking her for the Town and Country gas range she received as a wedding gift from the women's service organization



Outline of Philadelphia utility's broad program for obtaining qualified cadets and training them to meet requirements for advancement to engineer

Training Tomorrow's Engineers

BY M. S. VITELES*

AND G. L. HARVEY, JR.†

*Philadelphia Electric Co.,
Philadelphia, Pa.*

THE Philadelphia Electric Co., cadet engineer training program is designed to develop a group of technically trained men who will be available for specific assignments in engineering, operating and other departments, and capable of taking advantage of opportunities for advancement in a large electric and gas utility.

This training program is administered by a Cadet Engineer Training Committee. This committee is under the chairmanship of the assistant manager, Personnel and Public Relations Department, and includes representatives from the Engineering, Electric Operations, Gas Operations, Finance & Accounting, Industrial & Retail Sales, Customers Service and Service Operations departments, as well as the director of Placement Division.

* Director, Division of Personnel Research and Training.

† Director, Placement Division.

sion and the director of Personnel Research and Training Division, Personnel Department. A subcommittee of four including the representatives from the Engineering, Electric Operations and Gas Departments and the director of Personnel Research and Training, acts for the committee in interviewing and selecting candidates recruited by the director of Placement Division, who also acts as secretary for the committee.

First step in a cadet engineer training program is to find men who are interested in such training and are competent to meet the company requirements for acceptable performance as a cadet engineer and in subsequent assignments.

Recruitment of such personnel is handled chiefly through visits to engineering colleges. In addition, suitable material is found among men applying to the company for engineering positions. Moreover, Philadelphia Electric Co. has adopted the policy of employing engineering undergraduates for summer work, thereby setting up a pool from which cadet engineers can subsequently be drawn. From time to time, employees

who have completed engineering courses while working for the company are drawn into the cadet engineering program, although more frequently such men are transferred to line engineering positions because of age and wage factors involved.

As has been said before, recruiting has been carried out chiefly through visits to colleges generally during the months immediately preceding February and June graduations.

Each visit is carefully planned in advance through contacts with the college placement bureau which is informed of the number of men required for the cadet engineer training program, the type of engineering graduates needed, and the general characteristics required as set up in the job specifications for cadet engineers. Copies of a booklet entitled "Opportunities for Graduate Engineers" are supplied to each of the colleges which will be visited, as a way of acquainting possible candidates with the objectives and nature of the program.

The director of Placement acts as the company representative in visiting college campuses. At each college a short interview is conducted with interested engineering undergraduates during which time the interviewer completes the preliminary data form, included as Exhibit I. In addition, visits are made to professors and others at the college in order to obtain information about those interviewed and leads as to other promising candidates. On the basis of such interviews and supplementary information candidates are invited to come to Philadelphia at the expense of the company to go through the succeeding steps in the selection process.

As already indicated, Philadelphia Electric has adopted the policy of employing engineering undergraduates for summer work as an additional means of recruiting engineers as well as a step in developing good relations with engineering schools. During the past summer more than 100 engineering school undergraduates were placed on the payroll as vacation relief. Of these, 20 were engineer school juniors. (Continued)

[illegible]

Exhibit 1. This carefully-planned preliminary data form is completed by the interviewer during talks with interested engineering undergraduates on each college campus visited

A special program was arranged for these juniors which included a talk by the vice-president in charge of Electric Operations, a visit to one of the larger generating stations and a dinner at the company's Athletic Association Club House. These events were followed by a discussion of the cadet engineer training program and the advantages and disadvantages of work in the electric and gas utility industry in general, and the Philadelphia Electric Company in particular.

Candidates who are interested and seem acceptable to interviewers on the college campuses, and also those recruited through the company employment office and the summer work program, fill in a

regular company application form and are given a series of psychological tests to *determine their suitability as cadet engineers.* Appointments are made for the examination of those recruited at the colleges at a time convenient to these candidates.

The psychological examination of cadet engineers includes standard tests of general intellectual aptitude, arithmetical comprehension, mechanical comprehension, scientific aptitude and practical judgment. Each applicant is given an over-all rating of *good*, *fair* or *not quali-*

*The juniors referred to above were given these tests during the day devoted to familiarization with the company mentioned.

fixed on the basis of comparison of his test scores with averages made by a group of cadets whose scores were used in setting up tentative standards for selection.

Following the psychological examination, the applicant's records are reviewed by the director of Placement and the director of Personnel Research and Training as a basis for deciding whether or not the applicant should be interviewed by members of the Cadet Engineer Training Committee. The decision is based not alone upon the applicant's psychological test scores, but upon college grades, references from college professors and others, extent of participation in extracurricular activities including undergraduate engineering society activities, work and military experience, etc.

Separate Interviews

Those recommended for interview are referred to representatives from the Engineering, Electric Operations, and Gas Departments and the director of personnel research and training, who, as previously indicated, act as a special subcommittee in the final selection of cadet engineers. Each applicant is interviewed separately by each member of the subcommittee, who uses the form shown as Exhibit II as an aid to the interview and in recording his impressions and his final estimate of the applicant's over-all fitness for the position of cadet engineer. These ratings are summarized by the Division of Personnel Research and Training and reported to the subcommittee, through the chairman of the Committee on Cadet Engineer Training, for final action on the applicant.

It is the practice to offer employment as a cadet engineer only to applicants who have been endorsed as acceptable by all members of the subcommittee. Such offers are made through the Placement Division which completes the negotiations and makes the necessary arrangements with those who accept for reporting to work.

As indicated in Table 1 the recruitment and selection program for 1947 (February and June graduations) involved 24 visits to 17 engineering colleges. A total of 246 men passed through the preliminary interview. Of these, 22 were finally offered appointments as cadet engineers and nine accepted.

TABLE 1
RECRUITMENT AND SELECTION OF CADET ENGINEERS
1947

Engineering Colleges Visited	16
Total Number of Visits to Engineering Colleges	23
Preliminary Interviews	246
On campus	240
In Employment Office	6
Psychological Examinations	49
Interviewed by Cadet Engineer Training Subcommittee	39
Accepted by Cadet Engineer Training Subcommittee	22
Cadet Engineers Accepting offers	9
Number on Payroll (as of November 15, 1947)	8*

*One applicant accepted employment as a cadet engineer and withdrew after a month of employment.

Training Schedule

The cadet engineer training program includes (a) scheduled assignments to various company departments, (b) a company orientation program consisting of group sessions and field visits. The specific objectives of this training schedule are:

- (1) to provide over-all knowledge of the operating policies and practices of the major departments of the company;
- (2) to provide experience in the performance of a variety of jobs done in each of these departments and familiarity with equipment and other problems arising in maintaining efficient and continuous service to the customer;
- (3) to furnish an opportunity to work alongside company employees and to acquire an appreciation of job relations conducive to cooperation in working with fellow employees and supervisory personnel;

(4) to imbue each cadet engineer with a favorable attitude towards the company, its personnel, its customer relations policies and practices, and towards the electric and gas utility industries in general.

Departmental assignments under the current two-year cadet engineer training

TABLE 2
SCHEDULE OF CADET ENGINEERING DEPARTMENT ASSIGNMENTS

Electric Operations Department	9 months
Engineering Department	8 months
Gas Operations Department	4 months
Industrial and Retail Sales Department	2 months
Customers Service (including district office commercial operations)	1 month
TOTAL	24 months

Exhibit II. Rating form employed by special four-man subcommittee during separate interviews of cadet training applicants to record impressions and final estimate of each applicant's over-all fitness for cadet engineer. Back of form is for comments

RATING FORM FOR USE OF INTERVIEWERS AND ORAL EXAMINERS—2—1938

INSTRUCTIONS: Ask yourself how this applicant compares with those who are doing work of this kind. Consider whether his voice, appearance, etc., would be a liability or an asset in such a position. Rate him by making a check (✓) at that point on each scale where, in your judgment, the applicant stands. Rate the following traits:

- 1. VOICE AND SPEECH.** Is the applicant's voice irritating, or pleasant? Can you easily hear what he says? Does he mumble, or talk with an accent which offends or baffles the listener? Or is his speech clear and distinct, his voice so rich, resonant and well-modulated that it would be a valuable asset in this position?
- 2. APPEARANCE.** What sort of first impression does he make? Does he look like a well-set-up, healthy, energetic person? Has he bodily or facial characteristics which might seriously hamper him? Is he well-groomed or slovenly? Erect or slouchy? Attractive or unattractive in appearance?
- 3. ALERTNESS.** How readily does he grasp the meaning of a question? Is he slow to apprehend even the more obvious points, or does he understand quickly, even though the idea is new, involved or difficult?
- 4. ABILITY TO PRESENT IDEAS.** Does he speak logically and convincingly? Or does he tend to be vague, confused or illogical?
- 5. JUDGMENT.** Does he impress you as a person whose judgment would be dependable even under stress? Or is he hasty, erratic, biased, swayed by his feelings?
- 6. EMOTIONAL STABILITY.** How well poised is he emotionally? Is he touchy, sensitive to criticism, easily upset? Is he irritated or impatient when things go wrong? Or does he keep an even keel?
- 7. SELF-CONFIDENCE.** Does he seem to be uncertain of himself, hesitant, lacking in assurance, easily bluffed? Or is he wholesomely self-confident and assured?
- 8. FRIENDLINESS.** Is he a likeable person? Will his fellow-workers and subordinates be drawn to him, or kept at a distance? Does he command personal loyalty and devotion?
- 9. PERSONAL FITNESS FOR THE POSITION.** In the light of all the evidence regarding this person's characteristics (whether mentioned above or not) how do you rate his personal suitability for work such as he is considering? Recalling that it is not in his best interest to recommend him for such a position if he is better suited for something else, would you urge him to undertake this work? Do you endorse his application?

Applicant's Name or Identification Number _____ Date _____

Kind of work for which his suitability is appraised _____

Irritating or Indistinct	Understandable, but rather unpolished	Neither conspicuously pleasant nor unpleasant	Definitely pleasant and distinct	Exceptionally clear and pleasing
Unprepossessing or Unstable	Creates rather unfavorable impression	Satisfactory	Creates distinctly favorable impression	Impressive
Slow in grasping the obvious. Often misunderstands meaning of questions	Slow to understand subtle points. Requires explanation	Nearly always grasps intent of interviewer's questions	Rather quick in grasping questions and new ideas	Exceptionally keen and quick to understand
Confused and illogical	Tends to wander or to become involved	Usually gets his ideas across well	Shows superior ability to express himself	Unusually logical, clear and convincing
Notably lacking in balance and restraint	Shows some tendency to react impulsively and without restraint	Acts judiciously in ordinary circumstances. Might be hasty in emergencies	Gives reassuring evidences of habit of considered judgment	Inspires unusual confidence in probable soundness of judgment
Over-sensitive. Easily disconcerted	Occasionally impatient or irritated	Well poised most of the time	Superior self-command	Shows exceptional poise, calmness and good humor under stress
Timid, Hesitant. Easily influenced	Appears to be over-self-conscious	Moderately confident of himself	Wholesomely self-confident	Shows superb self-assurance
Keeps people at a distance	Does not easily attract friends	Approachable	Draws many friends to him	As inspiring of personal devotion and loyalty
Unsuited for this work. Not endorsed	Might do well. Endored with hesitancy	Endored	Endored with confidence	Endored with enthusiasm

SIGNATURE OF RATER _____

Fuller instructions and space for comments on applicant's behavior will be found on the back of this sheet.

This rating form prepared from suggestions furnished by W. V. Bingham.
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PHILADELPHIA ELECTRIC COMPANY

NAME OF EMPLOYEE
HOME ADDRESS
DATE OF BIRTH
GRADUATE OF

PAYROLL NO.

DATE EMPLOYED
CLASS

COURSE

OUTLINE BELOW THE ASSIGNMENTS OF THE ENGINEERING ASSISTANT DURING THIS PERIOD

NATURE OF WORK AND LOCATION	DATE		REPORTING TO	PERFORMANCE			
	FROM	TO		EXCEL- LENT	GOOD	FAIR	POOR

List below other Company activities in which the Engineering assistant has engaged during this period

List below outside activities having a bearing upon his services to the Company in which he has engaged

QUESTIONS TO BE ANSWERED

1. To which particular branch or division of the Company's business do you believe that he is best adapted, considering the special inclinations he has dis-
closed up to the present time?

2. (a) How long should he be continued in your Department, and why?

(b) When should he be transferred and to which Department?

3. If continued in your Division, what assignments, to broaden and develop him for further usefulness in our business, do you plan to give him next, and when?

List below any reports he has prepared during this period, and enter your comments

COMMENTS

GENERAL RECOMMENDATIONS OR REMARKS:

throughout their entire period of training. Such follow-up is maintained in part through use of the form shown as Exhibit III, which is filled in by the division head at the completion of the cadet's assignment to each division.

Cadet engineers report to the Personnel Department at time of transfer from one department to another and at that time their progress is discussed with the director of Placement and the director of Personnel Research and Training. In addition, there have been a number of dinner meetings at which the vice-president in charge of Personnel and Public Relations and members of the Cadet Engineer Training Committee have informally discussed the training program with cadet engineers and reviewed their points of view towards the company and towards the gas and electric utilities in general.

Initial Placements

Cadets who successfully complete the two-year training program are placed in technical positions in the various departments. In most instances, initial placements are as junior engineer, Engineering Department; assistant investigator plant tests, Electric Operations Department, or junior engineer, Gas Department. Placements are made on the basis of departmental needs, keeping in mind the interest expressed by the cadet engineer.

Opportunities have also been available occasionally for initial placement in the Industrial and Retail Sales Department and in other units of the company. Advancement subsequent to transfer to a permanent assignment is entirely dependent on the individual's ability, initiative and capacity to take advantage of opportunities which arise.

Philadelphia Electric has carried on a systematic program of cadet engineer training for over 30 years. An analysis made shortly before World War II showed that of 84 cadet engineers accepted during the preceding ten years, 70 or 83 percent were still in the employ of the company. The company's present forces include approximately 83 men who have come up through a cadet engineer training program in addition to approximately 284 graduates of engineering schools.

It was generally reported throughout the country that electric and gas utilities experienced (Continued on page 44)

Exhibit III. This form is filled in upon completion of cadet's assignment to each division. Back of form contains instructions for rating his judgment, accuracy, industry, etc.

program are shown in Table 2. Every effort is made to give the cadet engineer an opportunity to do useful and productive work while attaining familiarity with the work of the department and to obtain a basic understanding of the work situation in preparation for future supervisory responsibility.

The orientation course is designed to provide an over-all survey of the company and its operations and to furnish cadet engineers an opportunity to meet division heads and other company personnel responsible for the work of various company units. The orientation program includes 11 sessions, held every other week, starting approximately one month after a group of cadet engineers

report for work for the Company.

A full day is devoted to each session which generally covers the work of a company department. Prior to the session each cadet engineer receives an especially prepared paper describing in some detail the organization and operation of the company unit under discussion.

The first two hours of the full-day session are devoted to a group conference at which department representatives discuss the paper and answer questions raised by cadet engineers concerning the work of the department. The remainder of the day is devoted to field visits covering major departmental installations.

The program includes provisions for systematic follow-up of cadet engineers

Carbon

Oxygen

Steam

Reactions Studied

Equilibrium gas compositions and net heats of reactions are given for ranges of variables

BY J. D. PARENT AND S. KATZ

*Institute of Gas Technology,
Chicago, Ill.*

Following is a report on a study of the reactions of carbon, oxygen and steam sponsored by the American Gas Association and accomplished at the Institute of Gas Technology during the year ending June 1, 1947, with the guidance and advice of the A. G. A. Gas Production Research Committee and its Technical Advisory Subcommittee.

Dr. Parent has prepared the following summary as project supervisor. Dr. Katz has acted as project leader, assisted by L. Kanner, R. Husch, and S. Mori. In the immediate future the Institute will publish a complete summary of all equilibrium data.

EQUILIBRIUM concentrations of gaseous products resulting from the interaction of carbon (graphite) and steam, as well as from carbon, oxygen and steam have been calculated for a wide range of temperature, pressure and oxygen-to-steam ratio. The pressure range covered is one to 100 atmospheres, the temperature range is 900° to 1750°K (or 1160° to 2690°F) and the molar oxygen-to-steam ratio is from 0 to 0.70.

In addition to equilibrium gas compositions net heats of reaction have been

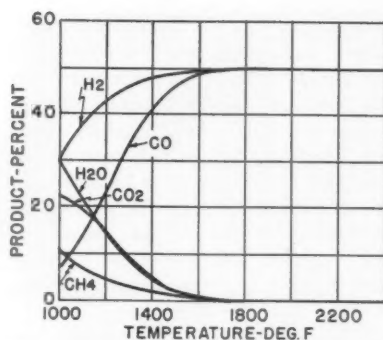


Fig. 1. Equilibrium compositions, C-H₂O*

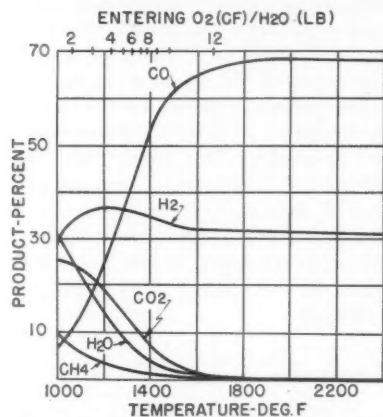


Fig. 2. Temperature dependence of equilibrium compositions of C-H₂O-O₂ systems in cases where net enthalpy change is zero*

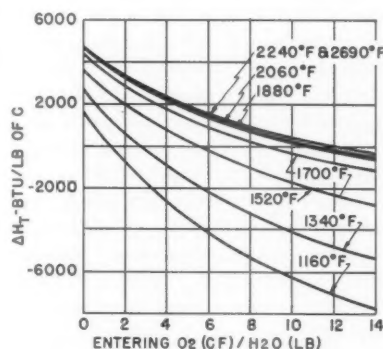


Fig. 3. Net enthalpy changes of C-H₂O-O₂ systems figured at ten atmospheres absolute

calculated for the ranges of variables mentioned above. Summary graphs have been constructed and some are shown in Figures 1-8. Illustrative individual graphs of composition as a function of oxygen-to-steam ratio in the inlet gas are shown for given pressures and temperatures in Figures 9 and 10.

As will be discussed later, certain

* Pressure one atmosphere absolute.

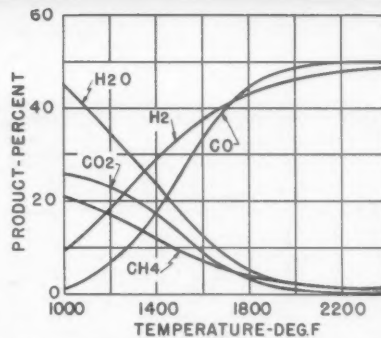


Fig. 4. Temperature dependence of equilibrium compositions of C-H₂O systems figured at 20 atmospheres absolute

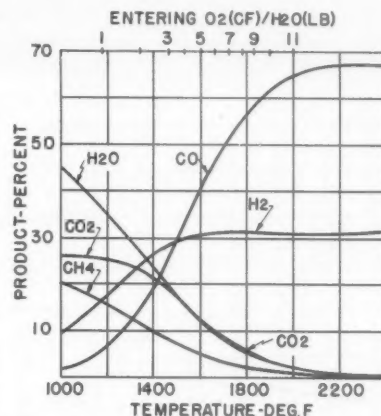
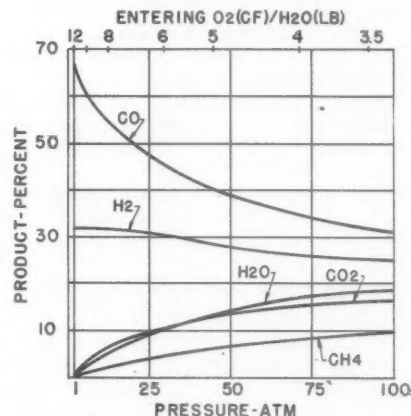
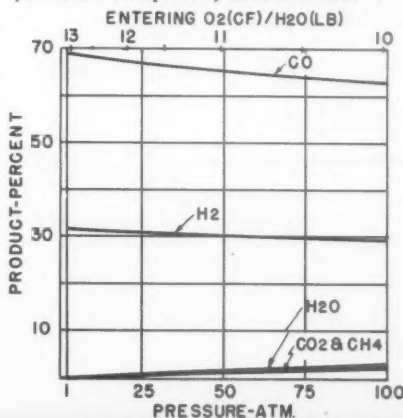


Fig. 5. Temperature dependence of equilibrium compositions of C-H₂O-O₂ systems, net enthalpy change zero, 20 atmospheres



Figs. 6 and 7. Pressure dependence of equilibrium compositions of C-H₂O-O₂ systems where net enthalpy change is zero and 2240° F



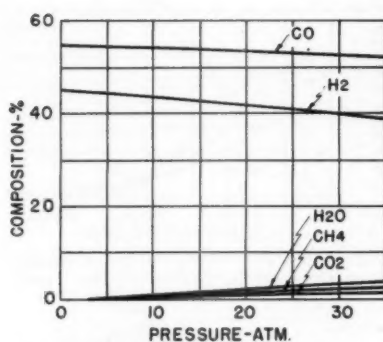


Fig. 8. Pressure dependence of equilibrium compositions of C-H₂O-O₂ systems, oxygen/steam ratio 0.111, temperature 2000° F

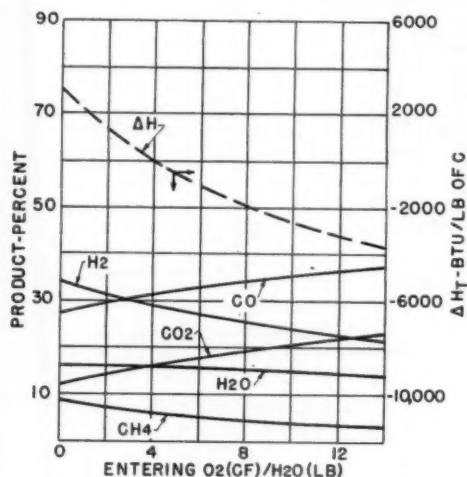


Fig. 9. Equilibrium concentrations and net enthalpy changes of C-H₂O-O₂ systems, at 1250° F and 20 atmospheres absolute

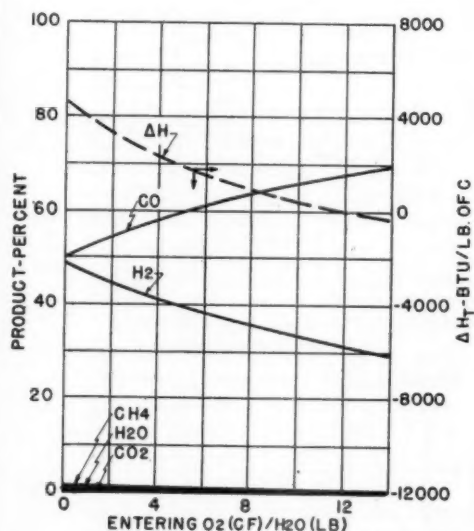


Fig. 10. Equilibrium concentrations and net enthalpy changes of C-H₂O-O₂ systems, at 2690° F and 42 atmospheres absolute

trends are obvious from these data. Thus, increased pressure and decreased temperature favor the formation of methane and carbon dioxide. Both of these substances have positive heats of formation from their elements so that the greater the proportion of these substances in the gas made the less are the heat requirements. Further, since CO₂ may be easily scrubbed from a system under pressure, a gas of higher heating value may be obtained.

Equilibrium gas compositions, of course, are not to be interpreted in general as those will be obtained in actual practice. These values are obtained from thermodynamic calculations and are independent of the nature of operational techniques and process time which may be employed. They are the values which are obtained at given temperatures and pressures if all reactions concerned proceed to such extents that the system as a whole cannot spontaneously undergo alteration in composition no matter how much time or contact with catalysts is provided.

Attainment Varies

In practice various degrees of attainment of equilibrium are obtained. For example, a mixture of hydrogen and oxygen does not react at an observable rate at room temperature in the absence of catalysts although the most stable condition is the combined state. This is also true of a mixture of carbon and oxygen. Other systems, particularly solutions of electrolytes may proceed toward equilibrium with extreme rapidity.

Chemical processes frequently are strongly influenced by such factors as time of contact, temperature, pressure and the presence of catalytically active substances. For example, a mixture of hydrogen and oxygen combines in the presence of a certain spongy catalyst at room temperature in such a manner that liquid water may be squeezed out of the catalyst. In addition, a spark may cause hydrogen and oxygen to combine violently.

As another example, the reaction of carbon and steam is known to proceed more rapidly the higher the temperature, or conversely, its rate drops off as the temperature is lowered. In fact, this reaction is very slow below 2000° F unless the carbon is in a very highly acti-

vated state. Where a solid phase is involved the reactivity depends on the physical condition of the substance. Thus, the greater the external area and internal pore surface the more reactive is the material even when the chemical composition is fixed.

Equilibrium data cannot be used directly for process calculations except for cases where the reactions are known to proceed to the equilibrium states. A knowledge of the rates of chemical reactions involved is absolutely essential for such a purpose. Equilibrium data can, however, be used with experimental data for comparative purposes in order to determine the extent to which a reacting system has approached the most probable final state.

By such a procedure one may examine the possibility of increasing process efficiency. It is to be noted that in some cases there may be many reactions involved, and this condition makes equilibrium calculations more laborious. This condition also normally leads to increased difficulty in interpretation.

Figure 11 shows the differences in equilibrium data for the carbon-hydrogen-oxygen system at one atmosphere pressure when the formation of methane is considered as related to the case neglecting methane formation. In practice some constituent may be formed much more slowly than others so that a pseudo-equilibrium state such as that indicated by Figure 11 may be approached.

Equilibrium trends uncovered in this work are of considerable interest. Thus,

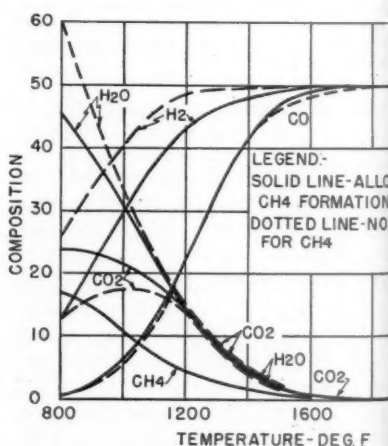


Fig. 11. Calculated equilibrium composition of gas from the reaction of C and H₂O

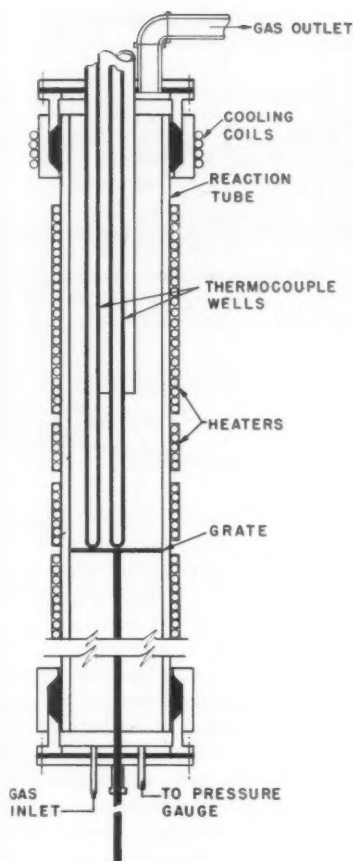


Fig. 12. Diagram of low pressure reactor

Figure 1 indicates that at temperatures exceeding 1800° F the only stable products are CO and H₂ in equimolar proportions if the pressure is one atmosphere. It is also clear that little steam should remain undecomposed in this range if adequate time of contact can be allowed. The adverse effect of increasing temperature on methane formation is obvious, and it is likewise evident that CO₂ formation is hindered by increasing the temperature level.*

In so far as oxygen has been used in the Winkler and Lurgi processes its effect was investigated. Figure 2 shows the effect of temperature on equilibrium composition when there is enough oxygen to make the over-all reaction isenthalpic, i.e., when the heat evolved by exothermic reactions is balanced by the

*Increasing the temperature level invariably speeds up the reaction velocity thereby decreasing required contact time and increasing capacity, but as pointed out it alters the equilibrium yield and composition. This effect is very significant in some ranges although it may be insignificant in others.

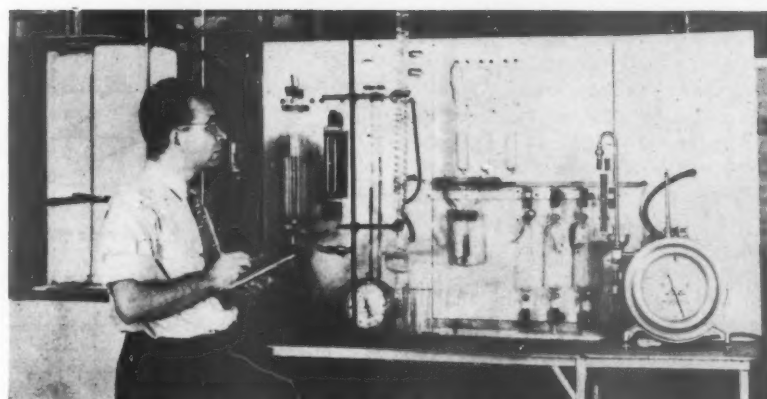
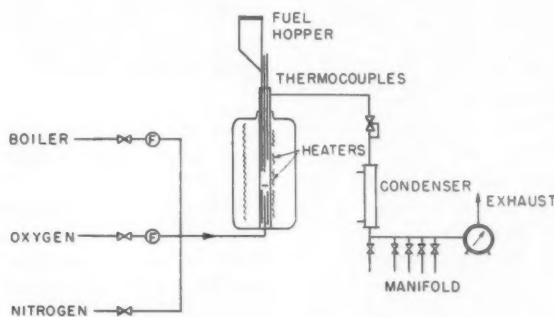


Fig. 13. Laboratory view of portion of the low pressure reactor used

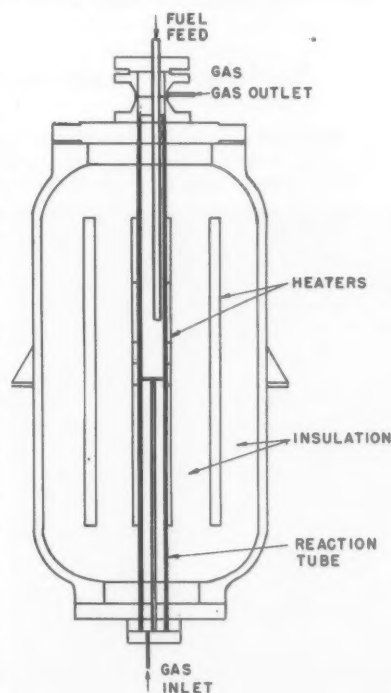


Figs. 14 and 15. Flow diagram of pressure reactor is shown above and outline of high pressure reactor and its parts, shown below

heat absorbed by those which are endothermic. It is to be understood that the oxygen requirement for this condition varies with the temperature and pressure. It is to be noted that the general trends are the same as those discussed for the case where no oxygen is used with the exception that the relative amounts are somewhat different.

The effect of oxygen on net heat absorption or evolution is shown in Figure 3 for a particular pressure. In this case negative increase in enthalpy means heat evolution. As would be expected, increasing the oxygen-to-steam ratio is attended by a greater heat evolution, and this effect decreases as the temperature is increased due to the adverse effect on CO₂ formation of increasing the temperature level.

Figure 4 shows the effect of temperature on the steam-carbon system at 20 atmospheres pressure. General trends are again as before with the exception that the increased pressure favors the

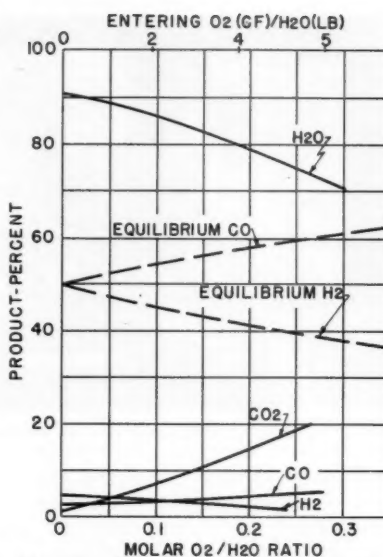


formation of CO_2 and CH_4 and hinders steam decomposition. Figure 5 is a similar graph for the case of oxygen being admitted to the extent required to make the reaction isenthalpic. It is seen that one of the major effects of adding oxygen is to increase the ratio of CO to H_2 .

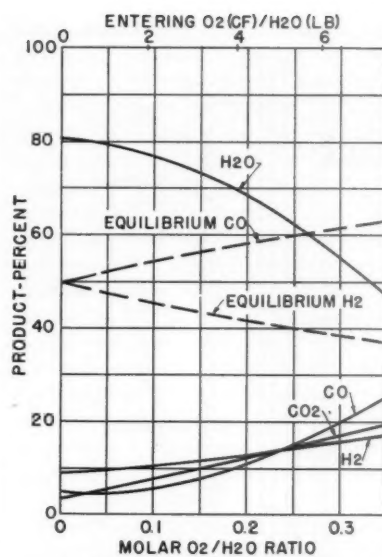
Figures 6 and 7 indicate the effect of pressure on equilibrium gas composition for given temperatures. Figures at the top of the graphs indicate the oxygen required at each pressure and the given temperature to provide zero net heat effect. Comparison of the two graphs clearly indicates the adverse effect of increasing temperature on CH_4 formation. Figure 8 is a similar graph for a fixed oxygen-to-steam ratio.

Figures 9 and 10 illustrate the influence of increasing the oxygen-to-steam ratio in the reactant gas on equilibrium composition, and inspection of Figure 10 clearly indicates that a moderately elevated temperature will offset the helpful effect of increased pressure on the formation of CH_4 and CO_2 .

It may also be reasoned that the high CH_4 content of the gas produced by the Lurgi process does not correspond to equilibrium at the high temperature in the fuel bed. Some of the extra CH_4 may come from the natural volatile mat-



Figs. 16 and 17. Experimental and equilibrium composition of $\text{C-H}_2\text{O-O}_2$ systems figured at 1800°F and one atmosphere absolute (left) and 1900°F and same pressure (right graph)



ter of the fuel, and some may come from vapor phase reaction in cooler parts of the system.

More than 100 experimental runs have been made in an effort to obtain kinetic or reaction rate data. These runs have been made in a reactor which has been designed for use at atmospheric

pressure (Figures 12 and 13).

A reactor for high pressure studies has also been designed and is now being fabricated (Figures 14 and 15).^{*} Figures 16 and 17 illustrate some results obtained to date and indicate the divergence from equilibrium composition. It will be noted that the reaction rate increases as the temperature is raised and as the oxygen-to-steam ratio is increased.

It is of interest that a narrow zone at the bottom of the reactor has been observed where the oxygen combines rapidly with carbon giving rise to the requirement for sectional heaters to control bed temperature. A similar zone is noted when CO_2 is used in place of steam, but in this case heat is absorbed. There are insufficient data in the latter case to warrant drawing conclusions.

The temperatures employed to date are 1600, 1700, 1800 and 1900°F . Bed depths of five and $7\frac{3}{8}$ inches have been used. The linear empty tube velocity was about 0.5 feet per second, and the fuel was 12/20 mesh ash-free Koppers coke in most cases. This experimental work is presented more fully in progress report Number 8 of project CPR-5B of the Institute of Gas Technology to the A. G. A. Gas Production Research Committee. The equilibrium data are contained in reports 6 and 7.

^{*} This vessel was received and mounted September 10. The insulation and heating elements are in place.

Accident Prevention Support Solicited

● Industrial accident experience in the gas utility industry was unsatisfactory during 1946—the frequency rate was 20.43^{*} and the severity rate 1.10.^{*}

In view of these facts, the Accident Prevention Committee earnestly solicits the support and active personal participation of every public utility executive, supervisor and employee in its effort to eliminate unsafe conditions and unsafe acts which cause accidents. After all, accident prevention is really an important operating problem which should receive the same consideration as labor, materials and other operating matters.

Accidents are costly in many ways. These costs can very well mean the difference between profit and loss.

Ours is a public service business, and there is something more than "safety for safety's sake" involved. The humanitarian aspect must always come first, of course, but aside from that, sound business efficiency demands that power, heat and light must be inexpensive, must be uninterrupted and must be safe.

Our immediate objective is a 25 percent reduction in the industry's accident rate for 1948. *With your active support we can do it!*

W. F. BROWN, Chairman
Accident Prevention Committee
American Gas Association

^{*} Figures quoted from "Accident Rates in the Public Utility Industries, 1946," published by the National Safety Council.

Service Cut-Offs in One-Foot-Square Holes

English gas company adopts American practices for work among bomb ruins



Checking position of main and service. Special tools are laid out nearby

BY FREDERICK BELL

Distributing Engineer, The Liverpool Gas Co., Liverpool, England

DURING my recent visit to a number of American gas companies I found that it was standard practice to cut off, relay and lay services with the minimum of excavation at the main and that in most cases this excavation had been reduced to a hole only one foot square. The method of cutting off services proved very attractive to me because of the considerable amount of demolition work that is going on in Liverpool as a result of bomb damage.

The small number of special tools required have already been made up and the Liverpool service squads now carry out in a most effective manner service cut-offs with no more road excavation than one foot square.

Some advantages of this method are as follows:

(1) Reinstatement of the one-foot-square opening is less expensive than that of a large opening;

(2) Back-filling of small openings is done so effectively that the surface is ready for immediate reinstatement without the danger of delayed settlement and with no hazard to traffic from any delay in repaving. This should result in improved public relations and lessened third party claims.

(3) Less heavy digging is required, for simple arithmetic shows that eight times as much dirt must be removed and replaced from a two-foot by four-foot opening (a usual size for such work) as from a one-foot by one-foot opening;

(4) Use of special tools and different technique has made the work more interesting and has provided opportunities for the workmen to show initiative and skill in handling the equipment.

(5) Work can be done much more rapidly and thus the over-all labor cost is much smaller than that required on the same operation in larger openings.

- (1) Post-hole digger
- (2) Wide-ended chisel bar
- (3) Hacksaw with a long handle
- (4) Fork for removing the service bend
- (5) Plug holder
- (6) Socket wrench with various adaptors.

While the excavation of small openings on first thought appears difficult, it has already been our experience that with the right tools, after a small amount of training our men do a fast and satisfactory job.

After removing the earth down to the level of main and scraping all soil from the service and main, the service is cut through just clear of the coupler on the bend with the hacksaw. Using the special fork tool, the bend is moved about one-eighth of a turn and a ball of clay inserted in the end of the bend to stop escaping gas. The bend is then unscrewed from the main while the second man on the (Continued on page 27)

To utilize effectively the small opening, the exact position of the mains and services must be known. We therefore make extensive use of the new type of "Cintel" main and service locator, which has proved extremely accurate although it can be influenced by an excessive amount of underground electric cables or tram lines.

By using the main finder, if necessary in conjunction with our mains records, the precise location of the point at which the service is attached to the main is determined. The position of the one-foot-square opening is then marked on the roadway and the digging started with a pneumatic concrete breaker or other methods. The dirt is excavated to the extent required by the particular operation to be performed, but because the hole is small a number of special tools are required. These are:

Post-hole digger used for removal after wide-ended chisel bar had loosened the soil



Fork-ended tool removing bend from the main

Employee Relations Conference Attracts 20-State Delegation

NEARLY 100 personnel executives from 20 states attended an informative Employee Relations Conference of the American Gas Association at the Adolphus Hotel, Dallas, Texas, November 19 and 20.

The meeting was sponsored by the A. G. A. Personnel Committee, Fred R. Rauch, vice-president and director, industrial relations, The Cincinnati Gas and Electric Co., chairman; the Southwest Personnel Conference, W. H. Senyard, director of personnel, Louisiana Power & Light Co., New Orleans, chairman; and the Midwest Personnel Conference, Vernon Myers, assistant to president, Sioux City Gas & Electric Co., Sioux City, Ia., chairman.

Following opening remarks by Willard G. Wiegel, personnel director, Lone Star Gas Co., Dallas, who presided at the first session, and Kurwin R. Boyes, A. G. A. secretary, the delegates were welcomed to Dallas by C. H. Zachry, president, Southern Union Gas Company. A timely discussion of utility operations under the Taft-Hartley Law, led by Benjamin Werne, counsellor of law and lecturer at New York University Graduate School of Business Administration, featured the morning session.

A forum on the topic "Finding Out What Your Workers Think," led by Joseph C. Bevis, vice-president, Opinion Research Corp., initiated the afternoon meeting. Mr. Bevis revealed interesting results of surveys by his firm and outlined effective methods of making employee surveys. Audio vision training aids and other modern employee training methods were covered in a discussion led by William H. Lough, president, Trade-Ways, Inc., New York.

Inspiring Address

Marshall Newcomb, general attorney for Lone Star Gas Co., Dallas, delivered an inspiring address, "The Three Great Movements in Civilization" at the banquet, November 19, at which M. V. Cousins, director of personnel, United Gas Pipe Line Co., Shreveport, presided.

A valuable presentation on "The Whys and Results of Job Evaluation" by Co-Chairman Rauch opened the second day's program. Following discussion of this subject, C. E. Jurgensen, personnel director, Minneapolis Gas Light Co., led a forum on the "Uses and Abuses of Employment Tests."

Important trends in communicating with employees were analyzed in a discussion at the final session led by Howard A. Marple, assistant director of advertising, Monsanto Chemical Co., St. Louis. An interesting highlight of this session was the showing of a motion picture film, "Under These Stars," which illustrated personnel selection and operating practice of Procter & Gamble Company.

The sessions closed with a broad-gauged round-table discussion in which each delegate

was asked to report on developments in his own company.

Personnel groups participating in the Employee Relations Conference later expressed in a letter to A. G. A. President, Hudson W. Reed, their unanimous appreciation "for the splendid support received from the Association in furtherance of industrial relations activities in the gas utilities industry."

Special tribute was paid to Kurwin R. Boyes, A. G. A. secretary, "for the time and effort he has devoted to this important work. His unselfish direction and guiding influence in matters of practical approach to problems encountered have proved of inestimable value in the continued success of each group."

Signing the letter were Fred R. Rauch, chairman, Personnel Committee; W. H. Senyard and V. H. Luneborg, chairman and secretary respectively, Southwest Personnel Conference; and Vernon Myers and Roy L. Thomas, chairman and secretary respectively, Midwest Personnel Conference.

Publicity Group Organizes 1948 Plans



A. G. A. Publicity and Advertising Committee: (seated, l. to r.) J. M. Hughes, Jean C. Thompson, A. G. A.; Harold E. Eckes, Cleveland; R. G. Barnett, Portland, Ore., chairman; R. D. Lewis, St. Louis; J. M. Floyd, Dallas; W. B. Hewson, Brooklyn; (standing) J. M. Beall, A. G. A.; Otto Manthe, Los Angeles; H. W. Givan, Pittsburgh; George A. McDonald and A. Q. Smith, A. G. A.; J. H. Short, Philadelphia; James E. Humphrys, Columbus, not shown

A COMPREHENSIVE publicity program for the gas industry in 1948 was outlined and discussed at a meeting of the Publicity and Advertising Committee of the American Gas Association, December 5, at the Hotel Biltmore, New York. Under the chairmanship of R. G. Barnett, vice-president and general manager, Portland (Ore.) Gas and Coke Co., publicity activities for the

past year were reviewed and plans made for strengthening these efforts and for broadening the fields to be reached with news of gas and gas appliances.

Publicity activities of the Association will continue to be channeled to four major fields: general and financial; Association and industry; domestic gas usage and industrial and commercial. Members of the A. G. A. Publicity Bureau are assigned to each of these endeavors and plans were discussed at length for widening the scope of each field.

Use of newspapers, radio, gas trade publications, business and specialty magazines and publications of allied industries as publicity media will continue on an enlarged scale. With more than 175 field correspondents in gas utility companies and 110 correspondents in manufacturing companies, gas industry and publicity will be disseminated at local levels across the nation. Contact and service work with leading national magazines will be continued on an expanded scale.

All efforts of the Publicity Bureau will be coordinated under the General Promotion Planning Committee in support of the current "Gas Has Got It" campaign and will become a part of future promotional activities under the new PAR plan for 1948.

Indexes

FOR THE

1947 Volume

OF THE

A. G. A. Monthly

WILL BE MAILED

WITH THE

February Issue

Portland Joins Reserve



R. G. Barnett, vice-president and general manager, Portland (Ore.) Gas & Coke Co., signing affiliation agreement making utility the sponsor of an engineer reserve unit

California Cooperative Advertising Continued

FOR the twentieth consecutive year, five major California gas operating companies will, in 1948, participate in a program of cooperative gas advertising.

Under the sponsorship of the Pacific Coast Gas Association, advertising will be scheduled in prominent domestic, dealer, architect and builder, commercial cooking and manufacturing publications published and read extensively in the western states.

Committee in charge of the 1948 program is composed of F. M. Raymond, San Diego Gas and Electric Co., chairman; R. R. Gros, Pacific Gas and Electric Co.; R. L. Hayden, Coast Counties Gas and Electric Co.; C. H. Potter, Southern Counties Gas Co.; and J. S. Spaulding, Southern California Gas Company.

R. D. MacMahon, Southern California Gas Co., is advisor to the committee on commercial copy. Advertising will continue to be placed by the Knollin Advertising Agency, San Francisco and Los Angeles.

Con Edison Publications Receive Contest Award

A "BEST" of public utility industry for 1947 award has been made to Consolidated Edison Co. of New York, Inc., for its employee, stockholder and customer publications entered in the recent Best Of Industry Direct Mail Contest sponsored by the Direct Mail Advertising Association. The award is in the form of a certificate.

The exhibit was shown at the Advertising Association's recent annual convention in Cleveland. Examples of employee publications were *Around the System*; *You and Con Edison*, the employee handbook; *Medical at*

Your Service, another handbook for employees, and *Con Edison in 1946*, the annual report to employees.

Stockholder publications included were the company's annual report to stockholders, and *News and Views*, a quarterly publication for stockholders.

Customer publications shown were literature concerning guided tours at Waterside; *Con Edison News*, a magazine for electric and gas customers; *Steam Talk*, a quarterly for customers of the N. Y. Steam Corp., and a broadside on steam air-conditioning.

The publications were prepared and produced by the Advertising, Editorial and Treasury Departments and the staff of the Steam Corporation.

Philadelphia Electric Issues Employee Guide

A 68-PAGE hand book entitled "You And Your Company" has been published by the Philadelphia Electric Co. as an illustrated guide for the utility's 7,500 employees.

This new mailing piece is a second of its type issued by the company in recent years. It sets forth the organization of the utility's 66 departments and divisions, enumerates various privileges accorded employees and supplies general information about the company's operations.

SERVICE CUT-OFFS

(Continued from page 25)

job is ready to insert the plug which he has already prepared at the end of the long plug holder. If the bend is corroded and strips, a very simple routine is used for its removal.

After making the plug hand-tight with the plug holder, the holder is detached and the plug finally tightened by means of the socket wrench with the appropriate adaptor. A small quantity of water is then run into the hole to test the plug for gas tightness. The hole is then back-filled, rammed, and the road surface replaced. Experience to date has shown that a normal cut-off from start to finish takes approximately one hour only even though a concrete road is involved. The job times are less than half our previous experience.

Liverpool has been using the method very successfully. No snags have developed and we can confidently recommend its general application.

Committee Sees Tangible Results From "Gas Has Got It" Drive



A. G. A. Domestic Gas Copy Committee meeting in New Orleans to study campaign results

EVIDENCE that the "Gas Has Got It" national advertising campaign already is producing tangible results and in many instances is actually retarding the sale of competitive ranges was presented during a meeting of the Domestic Gas Copy Committee of the American Gas Association in New Orleans, La., December 2.

Ray T. Ratliff, Kansas City, Mo., committee chairman, stated that the current cooperative advertising drive is stimulating the largest volume of tie-in promotion in the history of A. G. A. national advertising.

Gas Appliance Manufacturers Association reported that during the first 76 days of the "Gas Has Got It" promotion it had received 2,679 tear sheets of newspaper advertise-

ments showing automatic gas ranges built to "CP" standards, compared with 1,905 tear sheets published by gas companies, manufacturers and dealers during the nine months preceding the campaign.

Dealer and manufacturer newspaper advertising, it was reported, is appearing in approximately the same volume as gas company advertising—a development unique in the annals of gas industry promotion.

Charles W. Person, committee secretary, described plans of participating manufacturers to enlarge their advertising volume starting in January and predicted that combined national advertising placed by A. G. A. and participating manufacturers would establish an alltime record in gas range advertising.

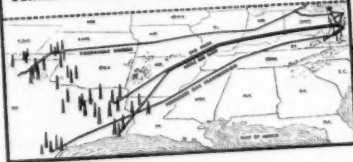
NATURAL GAS EMERGENCY

Frankly, we are worried. Because on this winter's coldest days, you users of Natural Gas will want three times as much gas as on the peak day of 1939. Much has been done—and is being done—to increase the supply of Natural Gas to our customers. We, and our suppliers, have spent millions of dollars to fill your continuing demands. Here is what has already been accomplished.

We have expanded our facilities.

- NEW PIPELINE from Tulsa, connecting with the Panhandle Eastern Pipeline Company, tapping the Natural Gas Fields of the great Southwest \$1,750,000
- NEW CONTROL STATION \$35,000
- ANOTHER NEW CONTROL STATION \$375,000
- A SECOND NEW PIPELINE from underground storage \$1,925,000
- ADDITIONS TO COMPRESSOR STATIONS \$507,000
- UNDERGROUND GAS STORAGE PROJECT With Levee Pipelines. Stored Gas \$10,000,000

We have tapped the lines from vast Natural Gas fields in Texas, Oklahoma, Kansas and Louisiana...



Still... this is not enough

In spite of all the time and money spent by ourselves and our suppliers—for more pipelines, larger compressor stations and underground storage facilities, etc.—we shall not be able

to meet your growing demands for Natural Gas this winter. For so far have these demands grown that they have more than offset the effect of this large expansion program.

You can help... A serious shortage of Natural Gas may mean cold homes, plants shut down, unemployment. If gas heating installations continue, just such a serious shortage may develop. Almost everyone can help improve the supply of gas for cold days ahead!

- CONSUMERS** can help by reducing or turning gas off for the installation of gas heating equipment.
- INDUSTRIAL USERS** can postpone all plans for additional heating and convert gas as they did during the war.
- INDUSTRIAL USERS** can convert their employees to separate equipment using gas only when needed, as in the lower priced temperatures. Use as much as possible as possible.

Remember—Natural Gas saved now means that much more in underground storage for your use when really cold weather comes. This Company earnestly solicits your cooperation for the well-being of every one of our customers.

THE EAST OHIO GAS COMPANY

Good example of forceful, clear-cut public relations approach is this advertisement of The East Ohio Gas Co. which appeared in 79 newspapers in company territory telling customers "facts about this winter's gas emergency... why there is an emergency... how the emergency will affect you... what your gas company has done about it... what you can do about it"

Notes from F. P. C.

MISSISSIPPI RIVER FUEL CO. has been authorized to construct facilities consisting of additional loop lines and compressor units costing \$13,654,140 which would increase the company's authorized daily sales capacity of 183 million cubic feet of gas by 83 million cubic feet.

Mississippi River Fuel transports and sells natural gas at wholesale in Arkansas, Illinois and Missouri. Principal deliveries are made in the St. Louis area.

MICHIGAN CONSOLIDATED GAS CO., AND AUSTIN FIELD PIPE LINE CO. have been authorized to construct facilities to be used by Michigan Consolidated for transportation of gas received from Panhandle Eastern Pipe Line Co. to the Austin Storage Field for subsequent withdrawal to serve the Detroit area.

Cost of the facilities to be constructed by Austin Field Pipe Line is estimated at \$8,151,000 and by Michigan Consolidated at \$1,174,000.

CITIES SERVICE GAS CO. has received final authorization to construct facilities to obtain additional gas supplies for the next two years. Estimated cost is \$1,409,683.

A. G. A. Sponsors New Research Project

A NEW cooperative research project to decrease the costs of combined winter heating and summer cooling air distribution installations for homes has been announced by R. J. Rutherford, chairman, Committee on Domestic Gas Research, American Gas Association, and Dean Melvin L. Enger, director, Engineering Experiment Station, University of Illinois.

First activity will be an investigation of improving air distribution systems for all-

year air-conditioning with the objective of reducing costs and increasing performance. Techniques, materials and construction methods will be studied.

The new cooperative project is sponsored by the American Gas Association's Committee on Domestic Gas Research. Work will be carried on in the Mechanical Engineering Department at the University by Stanley F. Gilman, special research assistant, under general supervision of Professor Seichi Konzo and Associate Professor Ross J. Martin.

Project was set up following a meeting of university mechanical engineering department representatives and the A. G. A. Technical Advisory Group for Gas Summer Air-Conditioning Research, which group will maintain technical contact with the university. This is a sub-group of the Committee on Domestic Gas Research.

Chairman of the A. G. A. Technical Advisory Group is G. E. May, New Orleans Public Service, Inc., New Orleans, Louisiana.

Other members are: Harold S. Birkett, The Brooklyn Union Gas Co.; Walter F. Friend, Ebasco Services Inc., New York, N. Y.; Fred M. Johnson, Surface Combustion Corp., Toledo, O.; John K. Knight, Servel Inc., Evansville, Ind.; Carl A. McKinney, United Gas Corp., Houston, Texas; Harry L. Warren, Southern California Gas Co., Los Angeles, Calif.; Glenn F. Zellhoefer, Williams Division, Eureka-Williams Corp., Bloomington, Ill.; and Eugene D. Milener, A. G. A., New York, N. Y., secretary.

New Reserve "Insures" Engineering Brains

A NEW style reserve has been erected by A. O. Smith Corp., Milwaukee, Wis., to assure the firm of a consistent engineering and research program even in depression years.

It is intended that all operating expenses for maintenance of the company's laboratories and technical staff concerned either with basic research problems or new product development will be charged to this reserve, which will be replenished in good years and drawn upon in bad.

Smith provided in the year ended July 31, 1946, a reserve of \$250,000 for research and development, which had lagged during the war. An additional \$479,302 was provided from income the following year. Of this amount \$446,417 was spent in the last fiscal year, leaving a balance of \$282,885.

This reserve can be used in future years, it is felt, without adversely affecting either the firm's earnings or working capital position.

A. G. A. Aids Charities

APPROXIMATELY one hundred dollars contributed by members of the headquarters staff, American Gas Association, New York, in lieu of sending Christmas greeting cards among the staff was donated equally this year to two charities, the New York Herald Tribune Fresh Air Fund and the New York Foundling Hospital.

Executive Committee Members Elected



Hudson W. Reed, A. G. A. president, presiding at meeting of Association's Executive Board

MEMBERS of the Executive Committee which has been authorized to act for the Executive Board between meetings were elected at a session of the board, December 3.

Following members were elected: Hudson W. Reed, president, The Philadelphia Gas Works Co.; Robert W. Hendee, president, Colorado Interstate Gas Co., Colo.; Hugh H. Cuthrell, vice-president, The Brooklyn Union Gas Co.; R. H. Hargrove, president and general manager, Texas Eastern Transmission Corp., Shreveport, La.; E. H. Eacker, vice-president, Boston Consolidated Gas Co.; Lyle C. Harvey, president, The Bryant Heater Co., Cleveland, O.; A. M. Beebe, president, Rochester Gas & Electric Corp., Rochester, New York.

Elected to membership on the Association's Finance Committee were Frank H. Lerch, Jr., president, Consolidated Natural Gas Co., New York, N. Y., chairman; Ernest R. Acker, president and general manager, Central Hudson Gas & Electric Corp., Poughkeepsie, N. Y.; James A. Brown, vice-president, The Commonwealth & Southern Corp., New York, N. Y.; J. N. Greene, president, Alabama Gas Co., Birmingham, Ala.; Earle J. Machold, president, Niagara Hudson Power Corp., Syracuse, N. Y.; Dean H. Mitchell, president, Northern Indiana Public Service Corp., Hammond, Ind.; and Paul R. Taylor, vice-president, Consolidated Electric and Gas Co., New York, N. Y.

New A. G. A. Publications



● **"GAS FACTS"**—A large amount of valuable factual data covering the gas utility industry has been assembled for the first time in this single 176-page volume, which has just been published by the Bureau of Statistics of the American Gas Association.

The work gives a comprehensive statistical record of the gas utility industry in the

United States for 1945 and 1946 and its completion marks an important milestone in the development of authoritative source material for ready reference. It is the first in a new series of annual statistical year books to be published by the Association.

Nine sections and 150 tables give accurate, up-to-date information on gaseous energy reserves; production, transmission, distribution, sales and utilization of manufactured, natural, mixed and LP-gases; and price, labor and financial data on the industry. Much of the material is new and all original information is based upon tabulating and classifications of data reported to the Association in its "Annual Report of Gas Operations."

In addition to the original data, the work includes a large amount of information from other sources which has a direct bearing on the gas utility industry.

The energy reserves section covers not only natural gas but natural gas liquids, crude oil, coal and lignite. Included under Finance are such items as security issues, financial ratios and construction expenditures. Number of employees, payrolls, earnings and hours, as well as accident rates are tabulated in the section devoted to labor. Price data include indexes of consumer prices, fuels and electricity, and retail gas bills.

Presentation of the material in "Gas Facts"

is organized on a functional basis with each section devoted to a broad phase of the industry. Exceptions to this plan are Section 1, which analyzes briefly the principal developments in 1945 and 1946, and Section IX, which reviews the implications of the statistical changes which were put into effect in 1945 and includes, for purposes of reference, revised time series for important aspects of the industry.

Each section is preceded by an outline table of contents for ready reference to tabular material, and is introduced by a brief explanatory text.

This volume is the culmination of more than two years of study, analysis, and revision of the gas industry's statistical program—undertaken to fulfill the requirements of the present-day business world. In its preparation, the Association has sought and received the suggestions and advice of many leaders in finance, investments, insurance and statistics. Much of the groundwork was laid by the A. G. A. Committee on Development and Use of Gas Industry Statistics and the Working Statistical Subcommittee, chairmen of which have been since 1945, Robert E. Ginna and Harry A. Weitzman, respectively, both of the Rochester Gas and Electric Corporation.

Copies of "Gas Facts" have been distributed to gas company members of the Association. Additional copies are available to them and others at \$1.00 each. Orders should be addressed to Bureau of Statistics, American Gas Association, 420 Lexington Ave., New York 17, N. Y.

Brooklyn Factory Gets Gas in Transit



Swing joint meant uninterrupted gas supply

UNIQUE gas-service-in-transit was supplied by The Brooklyn Union Gas Co. to the three-story building of Shore Instrument & Manufacturing Co., Inc., through use of swing joints in gas piping.

The building was turned 90° and moved more than 100 feet to a new foundation at a rate of five to 14 feet a day to permit widening of a Brooklyn boulevard. As the 3,500 ton structure moved the gas piping moved with it, employees received a free ride and the company obtained its usual gas supply without interruption.

North Shore Opens New Store



Inspecting North Shore Gas Company's attractive new store in Zion, Ill., are Viola Decker, home service advisor; John Sonn, sales representative; C. E. Baird, division manager, Mabel Gustafson, cashier. Roy E. Jones, sales and advertising manager, reports that dinner meeting of Zion Exchange Club prior to store's opening provided favorable public relations kick-off

Brooklyn Union Reviews Operations

THE Brooklyn Union Gas Co. recently issued a review of operations covering the past 15 years in continuance of a practice begun in 1942 of presenting annually a more comprehensive account of operations than normally contained in any single report or company statement.

Detailed financial statements are presented in the review together with highlights of recent developments and an outline of market and research trends. The report shows that entry of natural gas into the New York area is viewed favorably by the company, although actual benefits to the utility would depend upon the price it had to pay the pipeline company.

Magnesium Ribbon Used To Protect Pipeline

A HIGH pressure gas transmission line of The Manufacturers Light and Heat Co., Pittsburgh, Pa., was selected recently for the first experimental installation in the United States in which a magnesium ribbon was placed alongside a gas line to protect the steel pipe from underground corrosion.

About 1,000 ft. of an eight-inch high pressure line near Florence, (Washington County) Pa. were chosen for the test. When this section of pipeline was installed in June no protective measures were taken against galvanic corrosion.

The pipeline was located about two feet beneath the surface of the ground, and a small excavation was made laying bare the steel pipe. One end of the magnesium ribbon, $\frac{3}{8}$ inches by $\frac{3}{4}$ inches covering a small steel wire, was welded to the pipe. With a cable-laying plow, a narrow trench was cut along the pipeline and the ribbon laid parallel to the steel pipe.

The Dow Chemical Co., producer of mag-

nesium, claims that contact of the magnesium with the steel, through the medium of the earth, will prevent for about ten years the formation of galvanic cell corrosion generally caused by an electrochemical reaction between the pipe and chemicals in the soil surrounding it.

According to A. B. Lauderbaugh, chief gas engineer of the gas company, magnesium was used extensively during World War II but high war production demands prevented development of other uses.

In the Interest of Accuracy

JOHN E. KELLY, consulting engineer, Pittsfield, Mass., comments as follows on the item "Service" (reprinted from an earlier issue of *The Mission Pilot*) which appeared on page 489 of the November MONTHLY:

"What an extraordinary note about the aqueduct of Segovia! The aqueduct is by no means falling apart. I saw it in July (1947), shortly before arriving here, and you can assure whoever asks you that not a single stone of that noble monument has fallen out of place either during or since the Civil War.

"Paraphrasing the last sentence of this incredible statement, one might say that 'what ages of service could not destroy, misinformation has rapidly disintegrated.' Luckily, insofar as this is symbolic of so many things written about Spain, the disintegration is purely imaginary."

Gratitude

● Upon accepting membership on an important committee the president of a large midwestern utility wrote: "If I can do anything to help in my small way the splendid American Gas Association, I am always happy to do so."*

* Name furnished upon request.

Convention Calendar

1948

JANUARY

21-24 •A. G. A. Home Service Workshop, Congress Hotel, Chicago, Ill.

FEBRUARY

2-6 •Eighth International Heating and Ventilating Exposition, Grand Central Palace, New York (A. G. A. will exhibit)

22-26 •National Association of Home Builders, Stevens Hotel, Chicago, Illinois (A. G. A. will exhibit)

MARCH

10-11 •A. G. A. Eastern Natural Gas Regional Sales Conference, William Penn Hotel, Pittsburgh, Pa.

18-19 •New England Gas Association, Annual Meeting, Hotel Statler, Boston, Mass.

24-26 •Southern Gas Association, Annual Meeting, Galveston, Texas

APRIL

Mar. 30-Apr. 1 •A. G. A. Residential Gas Section, Mid-West Regional Gas Sales Conference, Edgewater Beach Hotel, Chicago, Ill.

5-7 •G.A.M.A. Annual Meeting, Drake Hotel, Chicago, Ill.

7-9 •A. G. A. Sales Conference, Industrial & Commercial Gas Section, Windsor, Canada

8-10 •Gas Meters Association of Florida-Georgia, Hollywood Beach Hotel, Hollywood, Fla.

8-10 •Mid-West Gas Association, Annual Meeting

12-14 •Joint A.G.A.-E.E.I. National Conference of Electric and Gas Utility Accountants, Hotel Jefferson, St. Louis, Mo.

13-15 •Southwestern Gas Measurement Short Course, The University of Oklahoma, Norman, Okla.

14-17 •National Restaurant Association Show, Cleveland Auditorium (A. G. A. will exhibit)

19-21 •A. G. A. Distribution and Motor Vehicle Conference, Hotel William Penn, Pittsburgh, Pa.

22-23 •Indiana Gas Association Convention, French Lick Springs Hotel, French Lick, Ind.

28-30 •Missouri Association of Public Utilities, Hotel Jefferson, St. Louis

MAY

4-5 •A. G. A. Natural Gas Department, Rice Hotel, Houston, Texas

18-20 •Pennsylvania Gas Association, Annual Meeting, Wernersville, Pa.

24-25 •A. G. A. New York-New Jersey Regional Gas Sales Conference, Westchester Country Club, Rye, N. Y.

24-26 •A. G. A. Production and Chemical Conference, Berkeley-Carteret Hotel, Asbury Park, N. J.

27-28 •Natural Gas and Petroleum Association of Canada, General Brock Hotel, Niagara Falls, Ontario

JULY

June 30-July 3 •Canadian Gas Association, Annual Convention, Jasper Park Lodge, Jasper, Alberta.



ACCOUNTING SECTION

JOHN A. WILLIAMS, Chairman

L. E. REYNOLDS, Vice-Chairman

WALTER E. CAINE, Secretary

Plan For Meter Readers

BY ARTHUR G. BURNETT

*Customer Accounting Manager,
New York Power & Light Corp.,
Albany, N. Y.*



A. G. Burnett

METER reading has long been recognized as extremely important in customer relations. Entering the home of every customer once a month, meter readers can be of material assistance in maintaining good relations. The manner and efficiency with which their job is done creates a lasting impression of the way the company is operated.

However, in a vocational sense, the meter reader is a "stepchild." His work is related to other jobs in electric and gas service, but his isolation in the field has denied him the opportunity to observe other jobs for which he might have aptitude or inclination. A man who has read meters for a number of years and who wishes to change to another type of work finds it difficult to qualify for a job which may have a brighter future.

Usually, men begin reading meters at an early age because full-time meter reading requires physical stamina. No previous experience is required and good meter readers can be trained in a relatively short time.

Meter reading is a good starting job in a utility because it provides certain basic experience which is useful in various departments of the company. However, it does not give a man an opportunity to acquire the experience and skills needed to qualify for higher paying jobs in later life.

To meet this situation, our company and the union recently instituted a new program which recognized meter reading as a starting job in the company for young men beginning their utility careers. Two important steps were necessary to make the plan effective.

First, wage rates were adjusted so that young men reading meters would be on a level with starting jobs in the Operating,

Service, Commercial, and Accounting Departments. By agreement with the union, the company posts all job vacancies for bidding, under which considerable weight is given to seniority. Both the company and the union recognized the desirability of setting the wage pattern so that meter readers could, with a few years' experience, bid into starting jobs in their chosen line of work. Thus, meter reading is no longer a "dead end" job. Promotional outlets are available in many lines



Courtesy, Service, Cities Service Co.

Dials such as these must be read accurately

of work, all within the framework of the company-union agreement.

It was also agreed that the plan would be applied only to new meter readers hired, leaving undisturbed men already on the job in higher classifications.

Second part of the program includes careful training of the new meter reader, an orientation schedule which shows him all the steps in the billing process from the installation of the meter to the printing and mailing of the bill. To this was added exposure (from two to four weeks each year) to various types of work so that he may choose one as his ultimate objective. The various steps in the training program are carefully plotted and a record is kept of each man's progress.

Study of the Niagara-Hudson System meter reading manual, as well as other pertinent material, is part of the training program.

After observation by experienced meter readers and checking by the chief meter reader, the trainee is given a route of his own. In this way, it is hoped that the reader will be not only well-qualified to carry on his job, but the meter reading force will eventually provide a reservoir of manpower for all departments.

In order that each new employee's background and personality be acceptable to all departments, new meter readers are interviewed not only by the resident manager and office manager, but also by the electric and gas superintendents.

Under the new plan, prospective meter readers are hired on a probationary status for a period of six months. The hiring rate is 73 cents an hour plus bonus. In a 40-hour week this amounts to \$29.20 plus bonus.

The bonus is paid as soon as a man reads 92 percent or more of a book. It increases in steps of 1/10th of one percent from 92 percent, for which a two cent bonus is paid, to 99 percent and over, for which a bonus of \$2.65 is paid.

With good training, meter readers begin to earn a bonus in their second or third week of employment. The time required to attain average bonus earnings varies with the ability of the reader and the size and characteristics of the district. In districts with less than 50,000 meters, new readers attain an average of 95 percent reading before a month has elapsed. In the larger cities with 75,000 to



Meter reader, too, has his exciting moments

* A novel approach presented to and printed with the permission of the A. G. A. Personnel Committee for the information of everyone interested in meter readers.

District	Percent Read	Base Pay	Bonus	Total Pay
Company-wide	97.1	\$30.40	\$ 7.70	\$38.10
Highest group	99.8	\$30.40	\$13.25	\$43.65
Lowest group	94.1	\$30.40	\$ 3.10	\$33.50*

100,000 meters, such as Albany, Schenectady and Troy, it takes approximately 50 percent longer to achieve the same percentage of readings.

The above figures show typical weekly earnings during June, 1947:

If he has indicated during his six months' probationary period that he will make a satisfactory employee, the meter reader is transferred to regular status. At that time the base rate is increased from \$29.20 to \$30.40 per week. There is no change in bonus payments.

There are 26 men in this classification at present. This number will be increased to 38 as the remaining 12 "old age" readers find other jobs and are replaced by new men entering the company.

The bonus plan provides for seven hours' regular reading with one hour to go over the route for "skipped" readings. All bonus



Reader's pad and pencil are familiar sights

routes are laid out on the "round-the-block" plan so that the distance traveled for "skipped" re-readings is held to a minimum.

The new Bonus Meter Reader's Job Classification contains the following provisions:

1. "This job is intended as a starting job leading to other lines of work. Employees in this classification will be required to spend part time each year on another job in their chosen field of work in an effort to determine their aptitude, skill and general fitness for other types of work. The time spent will vary from a minimum of two weeks to a maximum of one month depending on the time and work available and may or may not be in the district in which the employee normally works."

2. "Such employees will also be required to submit to semi-annual interviews or examinations regarding their progress on this job and suitability for advancement in other lines of work."

Type of men hired for these jobs as indicated by the qualifications required, is described in the manual as follows:

"Graduate of high school, business school

* This contains a large percentage of new readers.

or technical schools; or college graduate; active, intelligent, young man over 18 years of age and below 25 years of age; average height and weight, pleasant personality, neatness and ability to meet customers; must pass company driving test."

While the plan has been in effect for only one year, a number of meter readers have already bid into other starting jobs in the company such as groundman, meter tester, building maintenance work and office work. When the plan was first discussed, the union representatives expressed some concern about new men getting into low-pay starting jobs and not being able to bid into better jobs because of a lack of openings.

It was pointed out that there would be approximately 40 young men in this classification and that if each man read meters for a period of only four years it would require only ten openings per year to provide outlets for the new men. One year's experience with the plan indicates that, if anything, turnover will be too rapid rather than too slow.

Some claimed that it would be impossible to attract the proper type of men to enter the company's employ at the low starting rate of 73 cents per hour plus bonus. While the pay for the first week is \$29.20, the man's bonus earnings soon raise this weekly wage from \$36.00 to \$42.00 which compares favorably with starting salaries in other lines of work both within and without the company. It has been our experience, however, that most applicants are more interested in the promotional possibilities of the job than in the immediate salary.

These earnings, low in comparison with those of the old plan, have not made it very difficult to secure the right type of new employees. The applicants are sold on the promotional possibilities of the job, the opportunity to sample other jobs and the definite program laid out to help a man find the type of work for which he is best suited. Most of the young men hired are just out of school, single and living at home, so that the starting pay is not a compelling factor. Particular effort is made to select men whose characteristics will build a successful career in the company's employ.

At the time the program was adopted (September 1, 1946) there were 31 readers in the so-called "old age" group, earning approximately \$52.20 per week (at present pay rates). The number of readers in the group was "frozen" so that it would not be increased while the new plan was being established.

Every effort has been made since that time to fit these 31 men into other jobs through our system of posting and bidding for all vacancies. Nineteen readers have qualified for other jobs in the past year, leaving 12 more to provide for. When these 12 have qualified

in other jobs, the entire group will have disappeared and all readers will be working under the new plan.

Older existing meter readers were put on flat rates equivalent to their average earnings under the old bonus plan. The company and the union agreed that in conjunction with the job posting and bidding procedure, and even superseding it where necessary, the older meter readers would be transferred to jobs of lesser physical demand where their earnings would be reasonably close to those to which they had been accustomed. Readers who had been on the job for less than five years would be continued on the bonus plan then in existence but encouraged to bid out into other work and helped to secure such jobs.

It is interesting to observe the disposition of these 19 "old age" readers: four are doing meter testing; three are engaged in building maintenance work; three in substation operation; two became groundmen; two are rural meter readers; one is a collector, and four voluntarily resigned.

Pay rates of four men were not changed; one was increased \$2.40 per week; ten were decreased an average of \$3.67 per week. The four men who resigned went into various lines of work outside the company.

While one year's experience is insufficient fully to evaluate the new plan, principal objectives have been gained and the following conclusions may now be drawn:

1. The new plan has met the needs of the older employees. Those who still read meters are assured of a steady income as long as they remain on the job and those who have gone into other work have done so without serious loss of earnings. Employees, the union and the supervisory force understand the plan thoroughly and are in sympathy with its aims.

2. This plan offers a very attractive proposition to young men. The careful training and orientation program and the time allowed for sampling other kinds of work appeal to ambitious applicants.

Many hired under this plan have had military service and are seriously interested in obtaining a position with good prospects for future advancement. The training, follow-up program and interview by several department heads before he is hired give the new man confidence that his future success is a matter of real concern to the company.

3. Union-company relations have been improved by this demonstration that difficult and complex problems can be resolved by careful analysis, long-range planning and co-operative effort.

Kitchen-Talk

● This is the story of two cockroaches. One was having a moldy dinner in a sewer one day when his friend cockroach scurried over and told him about the new restaurant across the street.

"You should see it," he said, "the kitchen is spotless, refrigerator gleaming white, and everything is so clean!"

"Please," his friend interrupted in disgust, "not while I'm eating!"

—Koppers News



RESIDENTIAL GAS SECTION

C. S. STACKPOLE, Chairman

W. M. JACOBS, Vice-Chairman

F. W. WILLIAMS, Secretary

Section Faces

Important Year

WITH gas appliances becoming more generally available and the trend to selective buying presaging an early return of the buyer's market, the current year should be particularly important to the gas industry, especially in the highly competitive residential field.



C. S. Stackpole

Following early appointment of its operating committees and with committee acceptance proceeding rapidly, the Residential Gas Section of the American Gas Association stands prepared to face any challenges pending in the domestic market during 1948.

Managing Committee of the Section will meet at the Hotel Pennsylvania, New York, January 8, with its chairman, C. S. Stackpole, Consolidated Gas Electric Light and Power Co. of Baltimore, leading preparation and discussion of activities for the first half of 1948.

Scope and intensity of the sales and promotion work accomplished by the Section's appliance committees during the new year logically will depend upon availability of materials and the production volume of domestic gas appliances.

Other contributing factors will be the status of the market whether a seller's market or merely an acceleration of the buyer's market, and possibly even ramifications of the Marshall Plan for aid to foreign countries.

The Residential Gas Section, while mobilizing for 1948, is aware of these conditions and is working accordingly.

Another important group, the Nominating & Advisory Committee, is making steady progress under its chairman, W. M. Chamberlain,

Michigan Consolidated Gas Co., Grand Rapids, Michigan.

Domestic Range Committee—Carl H. Horne, Alabama Gas Co., chairman—This committee comprises a group of top-flight gas company sales executives and representatives of "CP" range manufacturers and is in the process of completing nation-wide and state organization as a basis for national promotion in the "Gas Has Got It" campaign. Revival of the "CP" ranger club and inaugurating contests for salesmen are on the agenda.



Carl H. Horne

Home Service Committee, Elizabeth J. Lynahan, The Peoples Gas Light & Coke Co., Chicago, chairman—Twenty members attended the group's meeting in Chicago and completed arrangements for an advance program of the A. G. A. Home Service Workshop (Chicago, January 21-24) which has been mailed since then.



E. J. Lynahan

Additional projects include the revision and cutting of a set of eight Career Records, formerly done by The Ohio Fuel Gas Co., which will be sold to gas companies as soon as completed.

Subject matter under preparation includes a booklet, "The Techniques of Demonstrations," for school use in special demonstrations and in training for home service; another booklet "Home Service Serves The Community," a suggested listing of books for a home service library, a pictorial supplement to the booklet "Modern Kitchens for Homemaking Instruction," and the completion of a two-year study of apprenticeship.

Gas House Heating Committee, H. A. Diekmann, The Brooklyn Union Gas Co.,

chairman—Plans to continue activities of last year's committee in promoting the upgrading of house heating equipment and its installation to the end of securing a profitable house heating load.

Plans to prepare gas heating sales and promotional programs to be put into effect when such promotion is warranted and will urge replacement campaigns to assure greater saturation of modern gas equipment.

All-Year Gas Air-Conditioning Committee—L. L. Ladewig, Houston Natural Gas Corp., chairman—In view of the importance of all-year gas air-conditioning it has been decided to make this

group a full-fledged committee rather than a subcommittee of the Gas House Heating Committee.

Personnel has been increased to 15 including representatives of the three major manufacturers in the field and a 13-point program to increase acceptance of all-year gas air-conditioning by the industry and the architectural and building professions.

Committee on Housing, Lawrence P. Fridley, Rochester Gas & Electric Corp., chairman—Will continue its activities to increase the use of modern gas service in the diversified residential housing field. Former subcommittees on Prefabrication, Collaboration with Housing Agencies and Housing Associations

and Housing Information will be eliminated and their assignments handled by the general committee for the sake of streamlined efficiency.

Subcommittee on Publicity and Specifications in charge of the "Reference Manual of



H. A. Diekmann



L. L. Ladewig



W. M. Chamberlain

Modern Gas Service" is completing a special program to sell the remaining 5,000 copies direct to the architectural and building professions.



L. P. Fridley

"CP" standards are the ultimate in modernity and efficiency.

Organization comprises two sections—a Committee on Improving Domestic Gas Ranges and a Committee on Improving Domestic Gas Water Heaters. Fifteen gas utility company executives experienced in technical, engineering and sales phases of the domestic gas appliances serve on both committees.

In addition engineering and technical men from gas range and gas water heater manufacturers are represented.

Committee on Improving Domestic Gas Water Heaters will further review requirements for automatic gas-water heaters and prepare recommendations for their possible revision and upgrading in the light of the new demands for hot water in the home caused by acceptance of automatic laundry and dishwashing equipment.



W. M. Jacobs

in addition to gas utility executives who are active in the program as members at-large.

With gas companies representing 12 million meters providing



B. H. Wittmann

Gas Light & Coke Co.—In view of the demand market and the production situation

during the past few years, this 15-man group has been relatively inactive.

Its objectives are to prepare gas refrigeration publicity and promotional programs and plans call for reviving the National Refrigeration Sales Contest when gas refrigeration production and the reorganization of gas company sales departments make this move possible.

Committee on Selection & Training of Sales Personnel,



E. M. Demlow

E. M. Demlow, Citizens Gas & Coke Utility, Indianapolis, Ind., chairman—This 12-member group of gas company sales executives, domestic

gas range, water heating, refrigeration and house heating manufacturer representatives, is concerned with the preparation of modern and efficient sales training material for the gas industry.

While the course "Fundamentals of the Gas Industry" is being widely used, use of "Residential Gas Salesmanship" has not come up to expectations, due in large measure to the fact that many gas companies held back in the organization of sales departments in view of the appliance situation and the continuing buyer's market.

Plans call for accentuating the Committee's efforts to increase use of the sales training course and to prepare other sales training material as needed.

Water Heating Committee, W. D. Williams, Public Service Electric & Gas Co., Newark, N. J., chairman—Sixteen utility sales executives, home service and automatic

gas water heater manufacturer representatives are on this committee.

An automatic gas water heating advertising, publicity and promotional campaign is being prepared in the form of a brochure similar to the one produced in the "Gas Has Got It" program.



W. D. Williams

Particular attention will be devoted to the promotion and sales of adequately sized automatic gas water heaters by dealers and utilities and to the upgrading of dealer and utility sales.

A nation-wide water heating sales and promotion program will follow, probably in 1949.

Window & Store Display Committee, D. W. Frye, Equitable Gas Co., Pittsburgh, Pa., chairman

—Publishes semi-annual issues of the Window & Store Display Bulletin, devoted to reproduction of displays successfully utilized by gas utilities.

Work on the bulletins will be continued and tie-in displays will feature the automatic gas range

"Gas Has Got It" program and the proposed water heating program.

Three regional conferences are scheduled by the respective planning committees:

(Continued on page 35)

A.G.A. Home Service Workshop Plans Nearing Completion

NEW developments and practical working information on a broad scale will be outlined to gas company home service personnel at the comprehensive four-day Home Service Workshop sponsored by the Home Service Committee, American Gas Association, January 21-24, in Chicago. More than 30 home service, equipment, food, education and sales authorities will be featured on the program which is under the direction of Elizabeth J. Lynahan, home service director, The Peoples Gas Light and Coke Co., Chicago, the Committee Chairman.

Workshop headquarters will be at the Congress Hotel but two sessions will be held in the Home Service Auditorium, The Peoples Gas Light and Coke Company. Skits, movies, demonstrations, round-table discussions and addresses will be utilized in presenting a wide variety of information.

A highlight of the opening session on Wednesday, January 21, is expected to be a discussion of "What's New in Meat Cookery" by Mrs. Beth Bailey McLean, Swift &

Co., and Esther Latzke, Armour & Company.

In addition to top-flight home service directors who will present all phases of home service operations, the following speakers from outside the gas industry will participate in the program: Edith Ramsey, *American Home* magazine, New York; Dr. Irving J. Lee, Northwestern University, Evanston, Ill.; Mrs. Louise J. Peet, Iowa State College, Ames; Reidun Kobler, The Quaker Oats Co., Chicago, and representatives of the Illinois Bell Telephone Co. and the United Fruit Company.

Samples of home service literature, photographs, class programs and other interesting material will be on display in a special exhibit at the Workshop.

Hotel reservations for gas industry personnel should be made immediately with Daniel Amico, Congress Hotel, Chicago. No hotel rooms will be assigned before Wednesday afternoon, January 21, as the workshop follows a large convention which will be checking out that morning.

Eastern Natural Gas Regional Sales Conference, William Penn Hotel, Pittsburgh, Pa., March 10-11, Irving K. Peck, The Manufacturers Light & Heat Co., Pittsburgh, Pa., committee chairman.

Mid-West Regional Gas Sales Conference,



I. K. Peck



W. B. Hewson

Edgewater Beach Hotel, Chicago, Ill., March 30-April 1, B. H. Wittmann, The Peoples Gas Light & Coke Co., Chicago, Ill., chairman.

New York-New Jersey Regional Gas Sales Conference, Westchester Country Club, Rye, N. Y., May 24-25, William B. Hewson, The Brooklyn Union Gas Co., chairman.

New Universal Ranges Unveiled



One of new models in Universal's 1948 line

C RIBBEN & SETON CO., Chicago, Ill., unveiled its 1948 gas range models in an advance showing at the Park Lane Hotel, New York, the week of December 8 and will introduce the models to the trade at the Winter Market in the American Furniture Mart, Chicago, starting January 6.

A variety of models will be offered including four-burners divided or grouped and six-burners. Some ranges have two over-sized ovens and two broilers, others have a separate high broiler and over-sized oven, and still others have the conventional over-sized oven and low broiler.

Outstanding new features include smoke-

proof and fire-proof broiler pan, fingertip control to raise and lower the broiling surface, and the use of advanced aero-dynamics to reduce approximately 50 percent the outside temperature of ranges while roasting or baking.

Another helpful innovation is a wire mesh screen tailored to provide uniform radiant heat over the entire broiling surface, thus making it possible to broil medium thick rare steaks with the surface characteristics of charcoal broiling.

Servel Issues Home Service Portfolio

A LARGE brochure containing numerous thought-starters for home service planning in 1948 has been just published by the Servel Homemaker's Institute, Evansville, Indiana.

Included because of their value as reference suggestions, hand-outs or study material, are the Servel recipe book, "New Concept of Planning Modern Gas Kitchens," "Let's Simplify Our Kitchen Work," for teen-age girls, "Homemaker's Digest," and "The Miracle of Ice from Heat."

Three colorful bulletin-headers are included for use in department mailings to homemakers, while two new platform scripts provide fresh suggestions for demonstrating the gas refrigerator and scientific kitchen arrangement.

N. E. G. A. Stages Home Service Conference

AN interesting two-day home service conference was sponsored by the Sales Division, The New England Gas Association, in Boston, November 20 and 21, in the auditorium of the Boston Consolidated Gas Company.

Margot J. Whitmire, Springfield Gas Light Co., Springfield, Mass., as chairman, of the Home Service Group, and Ella A. Heyne, Northampton Gas Light Co., Northampton, Mass., as chairman, of the conference committee, presented a comprehensive program containing a fact-packed discussion of the theme "Home Service Meets Its New Opportunities."

James A. Cook, Lynn Gas and Electric Co., Lynn, Mass., president of the association, opened the conference with a pertinent talk on "The Company As A Whole," in which he pictured the responsibilities of home service and its place in company operations. Other featured presentations included "Home Service and Public Relations" and "Home Service As I See It."

New developments in gas equipment, particularly in small appliances and new food products, were outlined. In another feature presentation Henry Morandiere, industrial designer, Cambridge, presented an unusually dramatic talk on the subject "The Kitchen As A Man Sees It."

Hardwick Introduces Upper Level Cooking



Open view of Hardwick Stove Company's new Challenger model which is offered as an answer to large percentage of women surveyed who have shown a preference for gas ranges having oven and broiler at convenient level

Home Service Meetings Sponsored by S. G. A.

HOME service personnel in the large area from Texas to Virginia served by the Southern Gas Association attended two regional two-day conferences in Atlanta, Ga., November 6 and 7, and Dallas, Texas, November 20 and 21.

Approximately 100 persons attended the conferences which were featured by discussions of food preparation for home freezers, "Do's and Don't's" by home service directors, and round-table discussions on home service programs in the schools.

Over-all planning for the two meetings was arranged by Winnell Simmons, chairman, S.G.A. Home Service Committee. Featured on each program was a talk entitled "The Golden Rule," presented in Atlanta by the personnel director of a large department store and in Dallas by the representative of a local hotel. Important discussions on the subject, "Writing for the Homemaker," were delivered at the different meetings by Gussie Jones, advertising director, Atlanta Gas Light Co., and in Dallas by a representative of *Holland's* magazine.

Tampa Utility Repeats Fruit Cake Project

THE Tampa (Fla.) Gas Co. has again offered the city's Pilot Club (a women's service organization) the use of its kitchen for a fruit cake project, following the success of the idea during the holiday season last year.

Business women members, working on an assembly line basis during a six-week period beginning November 1 produced more than 600 pounds of fruit cake. Each night large curious crowds are attracted to the utility's windows where club members, working in the sales floor kitchen which is open to a busy street intersection, are definitely in the limelight.



INDUSTRIAL & COMMERCIAL GAS SECTION

LEON CURUSOFF, Chairman

BERNARD T. FRANCK, Vice-Chairman

MAHLON A. COMBS, Secretary

Committee Lineup Announced

WITH the advent of the new association year, Leon Ourusoff, Washington Gas Light Co., Washington, D. C., chairman, has announced important organizational changes in the set-up of the Industrial and Commercial Gas Section in order to simplify the scope of committee activities, minimize overlapping of projects and at the same time broaden the work to be covered. In line with augmented Section activities several new and important committees have been added to the list of regular standing committees.

Principal changes involve addition of the following groups: Industrial Processing Committee, C. H. Lekberg, Northern Indiana Public Service Co., Hammond, Ind., chairman, covering the textile, ceramics, printing, food processing, drying and finishing fields; Commercial Processing Committee, E. J. Burke, The East Ohio Gas Co., Akron, chairman, with jurisdiction over other commercial activities which do not come under the food service field, such as large volume water heating and space heating; and the Equipment Improvement Committee, Roy E. Wright, NEGEA Service Corp., Cambridge, Mass., chairman, a group expanded from the previous subcommittee of the Food Service Equipment Committee, which will include in its studies the possibility of equipment improvement in fields other than food service.

Metals Committee, Carl Wierum, The Brooklyn Union Gas Co., chairman, is a natural outgrowth of two previous groups, the Committee on Heat Treating and Finishing with Gas and the Non Ferrous Metals Committee, which will now be known as the Ferrous Subcommittee with S. Procter Rodgers, Consolidated Gas Electric Light & Power Co. of Baltimore, as chairman, and the Non Ferrous Subcommittee under the chairmanship of W. Wirt Young, Waterbury, Conn.

Food Service Equipment Committee, Walter S. Anderson, Boston Consolidated Gas Co., chairman, is an over-all committee in this field, directing the activities of the several subcommittees concerned with various phases of food service.

Included are: Subcommittee on Sales Promotion, E. V. Fineran, Washington Gas Light Co., chairman; Subcommittee on Restaurant Sanitation, Charles F. Sevenoaks, Consoli-

dated Edison Co. of N. Y., Inc., chairman; Subcommittee on Appliance Servicing, D. J. Brogan, The G. S. Blodgett Co., Inc., Burlington, Vt., manufacturer representative and co-chairman with R. D. MacMahon, Southern California Gas Co., Los Angeles, the gas company representative.

Also included are: Subcommittee on New Trends, John J. Bourke, American Gas Association, New York, chairman; Joint Committee with F.S.E.I. and G.A.M.A., Walter S. Anderson, Boston Consolidated Gas Co., A. G. A. chairman, L. E. Clancy, Detroit-Michigan Stove Co., G.A.M.A. chairman, and W. F. Dougherty, W. F. Dougherty & Sons, Philadelphia, Pa., F.S.E.I. chairman.

It was thought advisable to create the following additional committees so that Section activities would fall under specific groups

with definite jurisdiction: The Sales Training Committee, John C. Dorsey, The East Ohio Gas Co., Cleveland, chairman, is an outgrowth of the two schools which were held last May and which are projected for 1949; two other new groups whose titles make their duties obvious are the Committee on Displays at National Expositions, and the Programs and Papers Committee, Frank H. Trembly, Jr., The Philadelphia Gas Works Co., and Harry A. Sutton, Public Service Electric & Gas Co., Newark, N. J., respective chairmen.

Two regular standing committees which have been retained and the functions of which are known to members, are the Managing Committee, Leon Ourusoff, chairman, and the Nominating Committee, Karl Emmerling, The East Ohio Gas Co., chairman.

Commercial Cooking Folders Available



Two of three folders for promotion of modern commercial gas cooking appliance sales sponsored by A. G. A., reviewed by Sales Promotion Subcommittee, Food Service Equipment Committee. Order from H. W. Ivins, P. O. Box 1304, Grand Central Station, New York 17, N. Y.

Commercial Cooking Cooperation Continues

A MEETING of the joint American Gas Association, Gas Appliance Manufacturers Association and Food Service Equipment Industry, Inc., Committee, November 13 at the Hotel Biltmore, New York, resulted in reaffirmation of the policy of continued cooperation between these three groups. It was decided in addition to render all possible assistance to the National Sanitation Foundation in its work on standardizing hot water temperature and quantity requirements for restaurants.

Present in the picture of the luncheon meeting shown at right are: (seated left to right) Leon Ourusoff, Washington Gas Light Co.; Walter S. Anderson, Boston Consolidated Gas Co.; S. R. Sperans, Nathan Straus-Duparquet Inc., New York, N. Y.; L. E. Clancy, Detroit-Michigan Stove Co., and W. E. Rudolph, Savory Equipment, Inc., Newark, New Jersey.

Standing are (left to right): W. H. Frick, American Stove Co., Cleveland, O.; D. J. Brogan, The G. S. Blodgett Co. Inc., Burlington, Vt.; Thomas J. Gallagher, The Peoples Gas Light & Coke Co., Chicago, Ill.; G. O. Dove, Jr., E. B. Adams Co., Washington, D. C.; I. S. Anoff, Albert Pick & Sons, Chicago, Ill.; M. A. Combs and John J. Bourke, A. G. A., New York, Charles C. Hanthorn, The Philadelphia Gas Works Company.

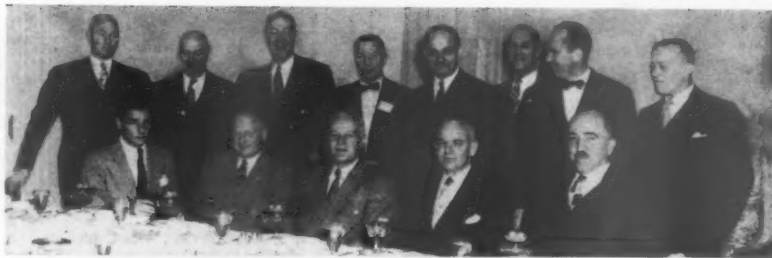
A. G. A. Food Service Group Enthusiastic

NEW program of the American Gas Association's Food Service Equipment Committee promises another year of outstanding accomplishments for this enthusiastic group. The first full committee meeting was held during the week of the National Hotel Exposition at which time 1947-48 plans were outlined to members and subcommittee chairmen and personnel were announced by Walter S. Anderson, Boston Consolidated Gas Co., chairman.

Committee policy as presented at the meeting is designed to continue the development of a vigorous, broad-gauged sales promotional program begun by earlier committees, to review material developed by former committees and complete worthy unfinished projects, to develop subcommittee assignments dictated by new trends, and to work toward more complete understanding and cooperation between dealers, utilities and manufacturers.

An important project for one of the subcommittees will be to develop the best method for securing widest distribution of the new manual, "The Commercial Gas Kitchen." Other objectives will be to devise ways and means of training utility salesmen, and a new project, for which a subcommittee has been formed to study organization and methods employed by utilities in servicing volume cooking equipment in hotels and restaurants.

One of the most important activities is appliance servicing and the results of this subcommittee's studies should prove of great benefit to gas companies.



Luncheon meeting of joint A.G.A., G.A.M.A., F.S.E.I. Committee reaffirmed cooperation



A. G. A. Food Service Equipment Committee: (Seated, l. to r.) Charles F. Sevenoaks, Walter W. Stake, John Kelsey, New York; Walter S. Anderson, Boston, chairman; James V. Hall, Hammond, Ind.; J. E. Benham, London; C. K. Vernon, Elizabeth, N. J.; Ray C. Juergens, Cleveland; (Standing) J. R. Delaney, Cincinnati; Arthur Pisman, Lynn, Mass.; Leon Ourusoff, Washington, D. C.; M. A. Combs, A. G. A.; J. A. Rockefeller, Newark, N. J.; John J. Bourke, A. G. A.; Lee E. Clancy, Detroit; Thomas J. Gallagher, Chicago; James M. Johnson, St. Louis. Meeting shown above was held during the week of the National Hotel Exposition

Metals Committee Lays Plans



Attending A. G. A. Metals Committee meeting in Chicago during recent Metals Show week were: (Standing, l. to r.) Frederic O. Hess, Philadelphia; Robert W. Millard, Detroit; H. Koester, Jr., Wellesley, Mass.; Hale A. Clark, Detroit; C. George Segeler, A. G. A.; A. H. Koch, Toledo; A. M. Thurston, Cleveland; M. A. Combs, A. G. A.; C. C. Eeles, Toledo; Stanton T. Olinger, Cincinnati, and Leon Ourusoff, Washington, D. C. Seated are: Vance Uhlmeier, Moline, Ill.; E. L. Woods, Springfield, Mass.; Andrew J. Huston, Worcester, Mass.; E. J. Geitmann, Chicago; E. L. Spanagel, Rochester, N. Y., and Carl Wierum, Brooklyn

FIRST Metals Committee meeting of the current Association year was held during Metal Show week in Chicago, October 21. Carl Wierum, The Brooklyn Union Gas Co., as chairman received the final report of the former Committee on Heat Treating and Finishing with Gas and noted that the year's activities showed a box score of seven information letters, one completed investigation, four projects on which the majority of the work is complete, and the initiation of one

American Gas Association research project.

Consensus of opinion indicated that the information letters filled a need within the industry and that this form should be continued. Among subjects suggested as topics for letters was hot forming. It was stated that in most plants heating processes for the hot forming of metals have not in the past received the technical attention they deserve. It is felt, however, that with the availabil-

(Continued on page 47)



TECHNICAL SECTION

A. C. CHERRY, Chairman

S. J. MODZIKOWSKI, Vice-Chairman

A. GORDON KING, Secretary

Technical Men Plan for 1948



Motor Vehicle Committee Meeting: (Left to right) M. C. Alves, Union Electric Co. of Missouri, St. Louis, chairman; G. P. Jackson, New England Gas & Electric Co., Cambridge, vice-chairman; Jean Y. Ray, Virginia Electric & Power Co., Richmond (E.E.I.)



Gas Production Committee Meeting: C. C. Russell, Koppers Co., Kearny, N. J., chairman. (second from right) and H. C. Jones, New England Power Service Co., Boston, vice-chairman. (second from left)



COOPERATIVE operating, engineering and research programs on a national scale advanced a long step forward when more than 100 committee chairmen and other members of the Technical Section, American Gas Association, formulated broad plans for the current Association year during a series of meetings at the Hotel Pennsylvania, New York, November 17-19.

A total of 16 separate meetings were held under the sponsorship of the Section's officers headed by A. C. Cherry, The Cincinnati Gas and Electric Co., chairman, and S. J. Modzikowski, The Peoples Gas Light and Coke Co., Chicago, vice-chairman.

High on the agenda was a discussion of programs for the joint spring conferences of the Section at which a large amount of valuable information is made available. These are the joint Distribution-Motor Vehicle Conference scheduled for April 19-21 at the Hotel William Penn, Pittsburgh, and the joint Production and Chemical Conference planned for May 24-26 at the Berkeley-Carteret Hotel, Asbury Park, New Jersey.

A meeting of the Section's Executive Com-

Long-distance travellers, (l. to r.) N. D. Urquhart, South Carolina Electric & Gas Co.; E. L. Henderson, United Gas Corp., Houston; H. J. Sterk, The Peoples Gas Light & Coke Co., Chicago; Burgess Manchester, Metropolitan Utilities District, Omaha

mittee was held Monday, November 17, preceding the major operating committee sessions.

Other meetings were held the same day by the following subcommittees; Distribution Design and Development, Calvin A. Brown, Rochester Gas and Electric Corp., chairman; Meters and Metering, H. J. Sterk, The Peoples Gas Light and Coke Co., Chicago, chairman; Carbonization and Coke, Elliott Preston, Koppers Co., Pittsburgh, chairman; Manufacture of High B.t.u. Gases, J. P. Stephens, The Cincinnati Gas and Electric Co., chairman; Use and Handling of LP-Gases, Charles L. Hulswit, Rockland Gas Co., Inc., Spring Valley, N. Y., chairman; Water Gas, C. E. Utermohle, Consolidated Gas Electric Light and Power Co., Baltimore, chairman; and Use of Oxygen in Gas Manufacture, L. L. Newman, U. S. Bureau of Mines, Washington, D. C., chairman.

Progress Reported

Climax of the Tuesday sessions was a dinner meeting of the Section's Managing Committee at which progress reports of the various committees were presented. This event was preceded by meetings of the following committees: Chemical, J. C. Sweeney, The Brooklyn Union Gas Co., chairman; Distribution, H. W. Nicolson, Public Service Electric and Gas Co., Newark, chairman; Gas Production, C. C. Russell, Koppers Co., Inc., Kearny, N. J., chairman; and Motor Vehicle, M. C. Alves, Union Electric Co. of Mo., St. Louis, chairman.

Considerable discussion developed at the dinner meeting with a motion finally being made and carried that the Managing Committee set up a main committee of the Technical Section to be known as the Corrosion Committee, along with appropriate subcommittees.

Chairmen Comment

Later in the evening Mr. Cherry called upon several chairmen to comment on their committee plans for the coming year.

One of these, Dr. E. W. Guernsey, Consolidated Gas Electric Light & Power Co. of Baltimore, who has been asked to continue as chairman of the Organic Sulfur Com-

Future Coal Refineries

Close-up view of large-scale program now underway for the gasification of coal and its place in the over-all energy picture

Water Gas Subcommittee Meeting: C. E. Utermohle, Jr., Consolidated Gas Electric Lights & Power Co., Baltimore, chairman

mittee pending a decision whether this activity should be turned over to the Research Committee rather than confined to the Technical Section, advised that continuation of the work has been recommended.

Whatever organization is agreed upon, he declared, every effort should be made to keep in a position where the experience of those who have had contact with the problems involved will be available.

A. D. Harrison, The Brooklyn Union Gas Co., chairman of the Purging Committee, stated that his group has done considerable work on the subject of revision of the present recommended purging procedures. Material is assembled, he said, and it is hoped that the work will be completed during the present year.

Closer Contact

H. K. Griffin, representing the Southern Gas Association at the dinner meeting, remarked that S.G.A. feels there is much to be gained by closer contact between the two groups and that both have many problems in common. In all probability, he added, considerable duplication of effort could be avoided.

On Wednesday joint program committee meetings were held for the purpose of organizing the spring conferences.

Numerous projects of great significance to the gas industry were discussed during these organization meetings which were characterized by a spirit of optimism and enthusiasm.

BY JOSEPH PURSGLOVE, JR.

Vice-President in Charge of Research,
Pittsburgh Consolidation Coal Co.,
Pittsburgh, Pa.

FUEL for comfort and fuel for energy to drive the wheels of industry are subjects of genuine public interest today. Had there been the need for striking evidence of this interest in our country's fuel and energy picture, that evidence clearly was to be seen in the nation-wide, in fact world-wide, reaction to a joint announcement made last March by Pittsburgh Consolidation and Standard Oil Development Company. This announcement told of our research plans in the field of coal gasification and liquefaction.

First, I wish to make it clear that we realize there is nothing new in the idea of making oil from coal. Various experiments and processes for distilling oil from coal go back to the middle of the Nineteenth Century.

How then do we propose to do this job? Following the synthesis method, we must first gasify coal . . . that is, convert it into carbon monoxide gas and hydrogen gas. This is exactly what you utility men in the gas manufacturing business have been doing for years and years.

If we want carbon monoxide and hydrogen gases, you might ask, why don't we use the conventional water gas sets that make exactly that. The answer is simple. We just can't afford the known costs of producing

Abstract from a talk presented October 8 during the general sessions at the A. G. A. convention in Cleveland, O., and carried in the Technical Section of the MONTHLY because of its wide interest to technical men.

these gases by the conventional methods of today. If we could sell gasoline for double or triple the present wholesale market price, that would be splendid (and easy), but I don't know of any customer who would be so generous just for the privilege of saying,



Distribution Committee Meeting: H. W. Nicholson, Public Service Electric & Gas Co., Newark, chairman (far right)

"I run my car on gasoline made from coal."

Moreover, we can't afford the cost of the preliminary coking process. We must gasify the coal directly. We must gasify huge quantities of raw coal per hour in single retorts or vessels. All known present methods of gasifying coal directly are small, low-capacity units completely unsuited to our American fuel economy based as it is on large, high-capacity units.

We are thinking of a relatively large commercial-size gasification vessel in which a bed of fine coal is fluidized by a current of steam and oxygen (or air) passing up through the bottom of the vessel. Such a vessel might consume several thousand tons of coal every 24 hours and would produce many, many millions of cubic feet of carbon monoxide and hydrogen gases a day;



Climax of Tuesday sessions was dinner meeting of Section's Managing Committee where progress reports of various committees were made

probably in multiples of hundreds of millions of cubic feet. Any one who is conversant with modern gas plant figures will appreciate that these are astronomical figures when compared to present day performances of a modern gas generator using coke or coal.

We are about to build a large-scale pilot plant near Pittsburgh to explore the possibilities of making gas out of coal on the vast scale just outlined. It is a big and costly job. The investment and cost of operating this pilot plant experimentally will be many millions of dollars. Unfortunately, there doesn't appear to be an easy or inexpensive solution to the problem.

In a possible future commercial plant synthesis gases (as they are called . . . composed of carbon monoxide and hydrogen) are scrubbed of impurities such as sulfur and are then carried into another large-size vessel called a synthesis reactor. In this vessel a finely divided catalyst is fluidized by the carbon monoxide and hydrogen gases that are bubbled up through the mass of catalyst particles. Most of the carbon and hydrogen atoms get together in this vessel to form liquid fuels. High octane gasoline comprises over 80 percent of these liquid fuels. The balance of the liquid fuels consist of Diesel oils and light fuel oils.

Some of the oxygen atoms carried into this reactor with the carbon monoxide gas react with some of the carbon and hydrogen atoms and form a large number of commercial alcohols and some other chemical products. Other things also happen in this reactor. Some of the hydrogen and carbon atoms get together and form methane gas which is of high B.t.u. value and this so-called tail gas could be made the equivalent of natural gas.

Picture Completed

Now we have the completed picture. Coal comes from the mine; is crushed to a rather fine size and is then fed directly into the large gas generator where it's converted into carbon monoxide and hydrogen gas, leaving only the inert ash to be removed from the generator. The gas is cleaned so it's free of dust, sulfur and other impurities and then is passed directly into the synthesis reactor filled with a finely powdered catalyst. In this reactor, high-octane gasoline, Diesel oil, fuel oil, alcohols and methane gas are formed. This is the coal refinery of the future, stated in the simplest of terms.

Notice that I haven't mentioned any research plans of our company for the synthesis reactor end of the coal refinery of the future. Several groups and companies in the United States for several years have been working on the catalytic reaction of carbon monoxide and hydrogen.

Pittsburgh Consolidation's partner in this coal gasification pilot plant project, the Standard Oil Development Co., has operated a large scale synthesis reactor pilot plant at Baton Rouge, La., for about three years. At this pilot plant, the raw material source is natural gas from the Louisiana fields. This natural gas is first broken down by partial burning into carbon monoxide and hydrogen,

A. G. A. Staff Honors Hall



Testimonial presented at a special luncheon in New York honoring Edwin L. Hall's appointment as director, A. G. A. Laboratories

which are then fed to the synthesis reactor where it forms into the same liquid and gaseous products previously mentioned as being formed in the proposed synthesis reactor part of a coal refinery.

All of the pilot plant work that has been done on the synthesis reaction of carbon monoxide and hydrogen is finally maturing into commercial applications. A large plant is being built near Brownsville, Texas, for the conversion of natural gas into gasoline, fuel oils and alcohols. Standard Oil Co. of Indiana has on the drawing board, I am told, plans for a similar plant in Western Kansas. Several other oil companies are reported to be planning to build plants in Texas to convert natural gas into gasoline. We feel, therefore, that by the time we have perfected a practical and commercial process for converting coal directly into carbon monoxide and hydrogen, the synthesis reactor half of our proposed coal refinery will be completely developed and matured.

While these advantages are being fully weighed, it seems all too clear that they will not offset the all-important factor of costs in delivering B.t.u.'s from such a plant to the consumer. All available means of projecting these costs at this stage of our development program support the belief that high B.t.u. gas could not be delivered into the mains of local gas companies at prices even close to those now obtained for natural gas from the Southwest.

Thus, we must conclude that the real usefulness (as a supplier of high B.t.u. gas) of our proposed program lies in having a plant sufficiently flexible in its operations that during summer months, for example, the bulk of the output would be converted into liquid fuels and in the winter months switched to the production of gas. If this arrangement can be perfected, and we hope it can, gas from the coal refinery would then be available to augment the supply of nat-

ural gas at a time when the demand is at a higher than average level. And it would be available at a time and under conditions when the local gas companies could justify the much higher cost of the coal refinery gas.

We cannot tell what the future will bring to us in the energy world. It may come to pass, for example, that coal will voluntarily yield to gas or oil in fields where gas and oil meet the need and still serve the broad aims of intelligent conservation and wise use.

On the other hand, the time may come when you in gas, or those in oil, will have to decide whether there are not certain energy applications better served by coal, thus freeing increments of gas and oil to do a better job in other consuming fields, all to the end that the American consumer is served at less cost. In any event, we do know with reasonable assurance that the need for energy in all its forms will grow . . . and all of us must grow if this need is to be met adequately and if we are to retain unfettered management of our roles in energy supply.

Peoples Natural Gas Plans Improvements

THE Peoples Natural Gas Co., Pittsburgh, is spending \$11,775,000 this year and next in an attempt to catch up with a backlog of improvements to its system, much of which has been delayed since 1939 due to wartime restrictions, according to E. M. Borger, president.

This outlay is for the drilling of new wells in Pennsylvania, building two new compressor stations, increasing the capacity of underground storage facilities in this state, replacement of several lines with larger and heavier pipe as rapidly as pipe is available, and the enlargement of shop buildings and service equipment for both domestic and industrial customers.

The company is conducting 63 separate drilling operations in Western Pennsylvania this year, several of them destined to go nearly two miles beneath the surface in an attempt to find additional sources of gas. It is also drilling 23 storage wells in worked-out gas pools in the section of the state where gas is stored during the low-demand of summer to be used to augment regular supplies during low-temperature days of winter.

Gas Sales Rise in October

DESPITE comparatively milder weather this year, October gas sales to ultimate customers totaled 2,152,536,000 therms, a gain of 5.4 percent over sales in October, 1946, the American Gas Association has reported.

The Association's October index of total gas utility sales stood at 184.2 percent of the 1935-1939 average. For the 12 months ending October 31, 1947, total utility sales of gas were 28,620,638,000 therms, an increase of ten percent over a year ago.

Personal and Otherwise

Brown Directs A. G. A. Accident Prevention Group



W. F. Brown

president of the Association.

Mr. Brown succeeds Howard T. Jayne, The Philadelphia Gas Works Co., who has served as committee chairman for the past two terms. The new chairman has spent 25 years in public utility, safety and fire prevention work.

He is a member of the board of directors, National Safety Council; a member of the Public Utility Section of the Council, and also a member of the Accident Prevention Committee, Edison Electric Institute.

He is vice-chairman, Operating Committee, Greater New York Safety Council, and chairman, Metropolitan Chapter, American Society of Safety Engineers.

Hussey Made Secretary of Standards Association

VICE-ADMIRAL George F. Hussey, Jr., (U.S.N. retired), has been appointed secretary, American Standards Association, effective January 1, 1948, succeeding Dr. P. G. Agnew, who has served A.S.A. as secretary and staff head for the past 28 years.

Frederick R. Lack, president, in making the announcement, added that Cyril Ainsworth, who for a number of years has been in charge of technical activities, will acquire expanded duties and responsibilities as director of operations for the staff.

Admiral Hussey received an appointment to the U. S. Naval Academy in 1912 and since then has served in numerous official capacities.

From December 1943 until his retirement December 1, 1947, he was chief, Bureau of

Ordnance, U. S. Navy Department. For his service in this position he was awarded the Distinguished Service Medal, and won the confidence of industry and government alike in his forceful leadership in directing the design, production and supply of weapons.

Dr. Agnew, one of the world's foremost authorities on standardization, will continue his service to A. S. A. as consultant.

With more than 366 projects being carried on under its procedures and more pending, A.S.A. expects to increase its activities during the new year to approximately three times those during the largest prewar year.

Four Advanced By United Gas Pipe Line

PROMOTION of four executives was announced recently by United Gas Pipe Line Co., Shreveport, Louisiana. M. A. Abernathy, vice-president, United Gas Corp., since May 28, became a member of the board of directors of the corporation September 29 succeeding George T. Naff, who has resigned to enter private law practice.

A. D. Greene, formerly chief engineer for United Gas Pipe Line Co., was elected vice-president in charge of operations by the board of directors.

Ed. Parkes, general superintendent of the field pipe line department since October 1, 1937, became vice-president in charge of the newly-created gas supply department October 21, 1947.

D. R. Pflug, assistant chief engineer for United Gas Pipe Line Co. in the Shreveport general office since February 1, 1946, was advanced to chief engineer October 21, succeeding Mr. Greene.



H. Vinton Potter

nate all A. G. A. promotional activities on an industry-wide basis under the new organizational procedure instituted with adoption of the Promotion, Advertising and Research Plan by the A. G. A. Executive Board.

John H. White, Jr., who joined the Association as director of sales promotion in 1945, has tendered his resignation effective December 31, 1947 as the organizational work and preparation of promotional material in which he specializes have been completed. He expects to be able to announce in the near future his plans for carrying on such

Young Retires From New Jersey Utility



Percy S. Young

PERCY S. YOUNG retired December 19 as chairman, executive committee, Public Service Corp. of New Jersey and subsidiary companies, after more than 49 years with Public Service and a predecessor company.

Mr. Young has long been active in national public utility associations and played

an important part in the formation of the present American Gas Association. He has been actively identified with A. G. A. since its organization in 1918, has served on many important committees, was a member of the executive board for several terms and served as the Association's president in 1934-35.

He is a member of the council, New York University, and a member of the board of trustees, Rutgers University.

Miller Joins California Standard Oil Board

ROBERT W. MILLER, president, Pacific Lighting Corp., San Francisco, has been elected a member of the board of directors, Standard Oil Co. of California. Mr. Miller has been an officer of Pacific Lighting since 1924, was elected executive vice-president in 1929 and president in 1940.

Potter To Coordinate A.G.A. Promotion

H. VINTON POTTER has been appointed coordinator of promotion, American Gas Association, effective January 1, 1948. H. Carl Wolf, managing director, has announced.

Mr. Potter, who formerly served as director of the Association's New Freedom Gas Kitchen program, will coordinate

activities in another field.

Full coordination of all promotional activities of the gas industry was recommended by the special committee appointed to review the first three years' operation of the Research, Advertising and Promotion Plan initiated in 1944. This recommendation was approved by the A. G. A. Executive Board and put into effect on a committee level by appointment of the General Promotion Planning Committee under chairmanship of Hugh H. Cuthrell, vice-president, The Brooklyn Union Gas Company.

Mr. Cuthrell's committee is comprised of the chairmen of the various sections, bureaus and committees within A. G. A. and the Gas Appliance Manufacturers Association which are engaged in promotional activities. His group is responsible for the planning of all Association promotional activities upon a unified and integrated basis and also for the effective conduct of such of these activities as are underwritten from the Special Promotional, Advertising and Research Fund.

Appointment of Mr. Potter as coordinator of promotion brings about a similar unification of activities on a staff level.

Philadelphia Electric Man Receives McCarter Medal



Harry P. Stewart (right), Philadelphia Electric Co., Delaware Division, receiving American Gas Association's McCarter Medal and certificate from R. G. Rindliffe, vice-president, for having saved the life of an Upper Darby resident who was overcome by gas

Lott Advanced By Bureau of Mines



Frederick S. Lott

FREDERICK S. LOTT, assistant chief, Petroleum Economics Division, Bureau of Mines, Department of Interior, for the past five years, has been promoted to division chief, succeeding Alfred G. White, who has been relieved of his duties to devote full time to petroleum demands.

Prior to joining the Bureau, Mr. Lott had extensive experience in petroleum and natural gas work with private concerns. He is a member of the American Gas Association Committee on Natural Gas Reserves and for the past five years has been principal author of the Carbon, Carbon Black and Natural Gas chapters, *Minerals Yearbook*, published annually by the Bureau.

Grow Retires from Southern Counties

A 46-YEAR career in the gas industry was completed December 1 with the retirement of O. R. C. Grow, manager, Harbor Division, Southern Counties Gas Co., Los Angeles. His successor is B. A. Devine, formerly superintendent, Eastern Division.

Mr. Grow entered the gas industry as an employ of the former San Bernardino Gas & Electric Co. in 1901. Later he went to the gas company in San Luis Obispo and still later to Oregon where in 1913 he became man-

ager of the Oregon Gas & Electric Company.

He returned to Southern California in 1918 as assistant district manager supervising operations in the San Pedro and Wilmington area. In 1922 the Long Beach District was split and the Harbor area formed into a new district with Mr. Grow as manager.

Metropolitan Gas Council Elects Two Officers

THE Metropolitan Gas Heating and Air Conditioning Council elected George Nash, Central Hudson Gas & Electric Corp., Poughkeepsie, N. Y., vice-chairman, and F. I. Banks, Westchester Lighting Co., Mt. Vernon, N. Y., secretary-treasurer, during the December meeting held at American Gas Association Headquarters.

At the same time Frederick T. Head, who retired December 1 from Consolidated Edison Co. of New York, Inc., one of the original founders of the Council, was elected to honorary membership.

Lewis G. Paulding, Long Island Lighting Co., Mineola, continues as chairman.

Borger Heads A. G. A. Radio Committee

EM. BORGER, president, The Peoples Natural Gas Co., Pittsburgh, Pa., has been appointed chairman of a committee of executives to gather information and present the gas industry's case in a threatened impairment of its use of mobile radio.

The industry will ask the Federal Communications Commission to allocate to it definite radio bands which will not be impaired and diluted by being shared with other users of less public importance. Represented on the committee are natural and manufactured gas men from Boston, Brooklyn, Chicago, the southwest and the west coast.

American-Standard Appoints Carnahan

HMELVIN CARNAHAN, assistant manager of the Pittsburgh sales office, American Radiator & Standard Sanitary Corp., Pittsburgh, Pa., has been promoted to manager following the retirement of E. H. Eggleston, who had held the position in American-Standard and its predecessor companies since 1910. Mr. Carnahan has served in the sales department for the past 12 years.

New Jersey Utility Promotes Alexander

APPPOINTMENT of William J. Alexander as director of safety education, Public Service Corp. of New Jersey, succeeding the late John M. Orts who died November 23, has been announced by George H. Blake, president. Mr. Alexander has been active in safety work with Public Service since 1925.

Mueller Company Lists New Top Management



A. G. Webber, Jr.

LUCIEN W. MUELLER has been elected chairman of the board of directors of the Mueller Co., Decatur, Ill., Albert G. Webber, Jr., president and treasurer, and J. W. Simpson, executive vice-president, following the recent death of William E. Mueller, the firm's president and treasurer.

Lucien Mueller was formerly vice-president in charge of administrative and sales engineering, Mr. Webber was general counsel for the firm, and Mr. Simpson has been vice-president in charge of sales. All have been associated with the company for many years. No changes in company policies are contemplated.

New Jersey Utility Promotes Taliaferro

LELAND TALIAFERRO has been appointed associate general solicitor, Public Service Corp. of New Jersey, according to an announcement by George H. Blake, president.

Mr. Taliaferro has been with Public Service since 1926 and prior to that was engaged for several years in general law practice in Newark.

He is a graduate of Rutgers University and Columbia University Law School. He started with Public Service as an attorney and was made assistant general attorney in 1927. Subsequently, he became assistant general solicitor and was made an assistant general counsel last year.

New Orleans Election



Harold E. Meade (right), executive vice-president, New Orleans Public Service, Inc., and a past-president, Southern Gas Association, shown above receiving the gavel from D. J. Devlin, whom he succeeded as president, New Orleans Association of Commerce, December 9

Christensen Receives Wisconsin Appointment

E. V. CHRISTENSEN has been named advertising manager, Wisconsin Public Service Corp., Green Bay, following the retirement of Dale Remington due to illness.

Mr. Christensen has been with Public Service for 21 years, coming directly to the company from the University of Wisconsin in 1926. He started work in the Accounting Department, was made division auditor in Manitowoc after four years, and held this position until 1943 when he was transferred to Green Bay as personnel engineer.

Smith New President of Roberts Brass

L. C. SMITH, JR., has been elected president, The Roberts Brass Manufacturing Co., Detroit, Mich., succeeding the late T. Herbert Roberts.

Mr. Smith joined the firm in 1939, serving first as production manager and since 1942 as factory manager. Previous to that time he was associated with the Chevrolet Division, General Motors Corporation.

Plank Promoted by Mueller Furnace

GUY W. PLANK has been appointed district sales manager of the newly-established Western Sales District, L. J. Mueller Furnace Co., Milwaukee, Wisconsin.

A former member of the Mueller organization, Mr. Plank was located at Pittsburgh and Baltimore from 1939 through 1941. He is assisted by W. E. Schourup, who covers the southern part of California and who has been with Mueller for almost 25 years. Headquarters of the Western Sales District is San Francisco.

Noble Appointed San Diego General Superintendent

HARRY A. NOBLE has been appointed general superintendent, San Diego Gas & Electric Co., a new administrative post created to expedite the company's current expansion program, according to an announcement by E. D. Sherwin, vice-president in charge of operation.

Mr. Noble, formerly superintendent, Electric Production Department, will supervise activities of six operating departments.

United Gas Man Wins A. G. A. McCarter Award

NORMAN T. GREEN, truck driver in United Gas Pipe Line Company's Wichita Falls District, was awarded the American Gas Association's McCarter Medal and certificate for his outstanding act of life

saving by application of the Schafer prone pressure method of resuscitation.

Presentation was made at a ceremony attended by 81 district employees in Quanah, Texas, December 2. A. D. Greene, vice-president of operations, presented Mr. Greene with a watch on behalf of the company.



N. E. G. A. Conference Hears Natural Gas Proposal

PROPOSAL of the Tennessee Gas Transmission Co., Houston, Texas, to build a 790-mile pipeline to serve New England with natural gas was outlined recently to the Company Managers Conference, The New England Gas Association, at the Hotel Statler, Boston.

An initial capacity of 100 million cubic

feet of natural gas daily is planned for the proposed line and this amount could be increased more than three times that much by adding additional compressor facilities as the New England demand grows.

Tennessee Gas told the company managers that date for completion of the line cannot now be set but that its position in regard to obtaining pipe and necessary materials is such that the line "can be built in the shortest possible time."

Geological Survey Marks Anniversary

FIFTIETH Anniversary of the West Virginia Geological Survey was celebrated December 5 by a joint meeting with the Appalachian Geological Society of Charleston, W. Va., and the Oil and Gas Section, Engineers Society of Western Pennsylvania, Pittsburgh.

Scheduled to participate on the program were: Dr. Irvin Stewart, executive officer, Geological Survey Commission, to give the welcoming address and introduce the toastmaster; Gordon Gully, Gulf Oil Co., Pittsburgh, and Dr. Paul H. Price, state geologist, to review the history of the survey and its future aims.

Comments were planned by DeWitt T. Ring, vice-president, Columbia Oil and Gasoline Subsidiary Co.; Joseph M. Low, Hope Natural Gas Co., and C. E. Lawall, assistant vice-president, C. and O. Railroad.

Wisconsin Group Holds Joint Program

G. H. HEAD, Wisconsin Gas & Electric Co., Racine, was elected chairman of the Technical Division, Gas Section, Wisconsin Utilities Association, and H. K. Wrench, Jr., Wisconsin Fuel & Light Co., Manitowoc, was elected vice-chairman, at a joint convention of the Technical and Commercial Divisions, Electric and Gas Sections, Wisconsin Utilities Association, at the Schroeder Hotel, Milwaukee, November 19-21.

J. D. Howard, Wisconsin Power & Light Co., Madison, was elected chairman of the Commercial Division, Gas Section, and J. H. Dunham, Wisconsin Gas & Electric Co., vice-chairman.

More than 425 delegates registered for the joint meeting, the first convention of the section since 1941 and the first combination session in the organization's history.

E. C. Brenner, association president, outlined some of the challenges facing gas and electric supply systems at a joint meeting, November 20. Average annual use of gas per domestic customer in Wisconsin has risen 15 percent since 1939, he said. Commercial users increased consumption of gas 33 percent during that period and industrial consumers, 62 percent.

H. Vinton Potter, director, New Freedom Gas Kitchen Bureau, American Gas Associa-

tion, New York, in a dramatic presentation reviewed the A. G. A. Certification Program for New Freedom Gas Kitchens, using models to highlight the four national requirements set up for certification and a fifth to emphasize the necessity for being prepared to sell.

This new program, he concluded is a buying guide which will be eagerly sought by the public.

Other subjects of general interest to the two sections were presented by Grover C. Neff, president, Wisconsin Power & Light Co.; G. V. Rork, president, Northern States Power Co., Minneapolis, Minn.; Louis Ruthenberg, president, Servel, Inc., Evansville, Ind.; Professor F. W. Duffee, chairman, Agricultural Engineering Department, University of Wisconsin; Attorney F. H. Prosser, and E. Carl Sorby, vice-president, Geo. D. Roper Corp., Rockford, Illinois.

Speakers at the Gas Technical Division's meetings included: Carl A. Altenbern, vice-president and general manager, Wisconsin Southern Gas Co., and chairman of the Division; O. W. Barescher, Wisconsin Public Service Corp.; Peter Bruck, The Peoples Gas Light and Coke Co., Chicago, Ill.; Tom Hayes, Milwaukee Gas Light Co., and W. H. Ganley, Falley Petroleum Company.

Obituary



T. H. Roberts

T. HERBERT ROBERTS, president, The Roberts Brass Manufacturing Co., Detroit, Mich., since 1938, died of a heart attack, November 7.

Mr. Roberts became associated with the company, which had been founded by his father, upon completing school. He later served in various capacities including general manager, vice-president, and finally president and treasurer.

ing general manager, vice-president, and finally president and treasurer.

HENRY C. WEHNERT, 64, former chief engineer, The Laclede Gas Light Co., St. Louis, Mo., died November 28 of heart disease at his home in University City, Missouri.

Mr. Wehnert retired in 1945 after 39 years of valuable service with Laclede. During those years his standing as a gas engineer became widely recognized.

He came to Laclede as a cadet engineer in 1906 soon after graduation from Purdue University and subsequently served under seven presidents. Two years after joining the organization, he was made assistant superintendent at Station A. In October the following year he rose to the position of superintendent. In March, 1916, he was named superintendent of manufacture and nine years later appointed chief engineer, a post he held for 20 years.

He is survived by a stepson and two sisters.

JOHN M. ORTS, director of safety education, Public Service of New Jersey, died November 23 in a Newark, New Jersey, hospital following a brief illness.

He was active in the American Gas Association, serving as a member of the Accident Prevention Committee and chairman of the Subcommittee on Awards. He was also a member of the National Safety Council, American Society of Safety Engineers and the Board of Trustees, Newark Safety Council.

Mr. Orts started with the company as a street car conductor in 1904, in 1908 was transferred to the Instruction Department and in 1924 to the Department of Safety Education.

Surviving are his wife Sadie and a daughter, Mrs. J. T. Glazier.

IRVIN W. PEFFLEY, for many years an executive of the American Stove Co. and a leader in gas industry activities, died at his Florida home November 30 at the age of 72.

Prior to retirement in 1940, Mr. Peffley served the company as manager, Export Division, and was for several years a vice-presi-

dent and member of the board of directors.

It was largely through his efforts that American Stove entered the export field in 1913. Under his guidance, gas and gas ranges were first promoted on a large scale in foreign countries.

Though Mr. Peffley traveled abroad extensively, he contributed much to the American gas industry. He helped in 1935 to organize the Association of Gas Appliance & Equipment Manufacturers, now the Gas Appliance Manufacturers Association. For his industry efforts he was elected first chairman of the gas range section and named to the board of governors.

He is survived by a wife and daughter.

HERBERT APPLETON WAGNER, former president and chairman of the board, Consolidated Gas Electric Light and Power Co. of Baltimore, died December 5 following a short illness.

Mr. Wagner received his mechanical engineering degree from Stevens Institute of Technology in 1887. In 1937 he was awarded

the honorary degree of Doctor of Engineering by Johns Hopkins University.

He began his career as a construction engineer with Westinghouse Electric & Manufacturing Co. in 1887 and became general superintendent, Missouri Edison Co., St. Louis, the following year.

From 1900 to 1910 he engaged in private practice as a consulting engineer in New York, thereafter becoming vice-president, Consolidated Gas Electric Light and Power Co. of Baltimore, in which capacity he served until elected president in 1915. In March 1939 he was elected chairman of the board and president.

Mr. Wagner resigned as president March 26, 1942 and as chairman of the board May 27, 1943.

Besides his membership in the American Gas Association he was a life member of the American Institute of Electrical Engineers, a former member of the Executive Committee of the Association of Edison Illuminating Companies, and a former trustee of the Edison Electric Institute.

CADET ENGINEER TRAINING PROGRAM

(Continued from page 20)

difficulties in meeting the quotas set up for cadet engineers. This was also the experience of Philadelphia Electric, although the ratio between the number of men interviewed on the campus and in the employment office and the number finally placed on the cadet engineer training roll given in Table 1 may be misleading since the employment of cadet engineers for this company has always been a highly selective one. However, the fact is that the Cadet Engineer Training Committee set up a quota of 24 cadet engineers for 1947 and only eight were obtained.

Because of the immediate needs of various departments for technically trained men, it has been decided to reduce the training program for cadet engineers employed in 1948 to 18 months. Cadet engineers employed in 1947 were paid \$200 per month as a starting rate with scheduled increases of \$25 per month at the end of six, 15 and 24 months, respectively, bringing the rate at the time the cadet engineer is ready for permanent assignment to \$275 per month.

It has been decided to increase the starting rate for cadet engineers employed in 1948 to \$233, and to schedule increases at six-month intervals to bring a cadet engineer to the rate of \$308 at

the time he is ready for permanent assignment.

Shortening the training course is definitely recognized to be a compromise in terms of adequate training. It is proposed to meet this problem in part by extending the cadet orientation training program to insure fuller coverage of the work of the departments to which cadets will not be assigned in the new training program.

It is the opinion of the Cadet Engineer Training Committee that the recruitment of cadet engineers for the Philadelphia Electric Co. and for the utility industries in general is a continuous process.

Schools Encouraged

For this reason the company is taking definite steps to help engineering undergraduates obtain information about the electric and gas utility industries by encouraging engineering schools to place it on their list for senior inspection trips; by extending the program of employing junior engineering students for summer work; by making key men of the company available for talks to student meetings of the A.S.M.E. and A.I.E.; by sending company publications to engineering schools, and by undertaking to cooperate in every way possible with such national programs as may be set up by Edison Electric Institute and American Gas Association.

GAS INDUSTRY FORGES AHEAD

(Continued from page 6)

One project under way explores oxygen-steam-carbon reactions at various temperatures and pressures to disclose the full possibilities of the water gas process and for development of processes for production of high B.t.u. gas or for the catalytic reforming of hydrocarbon gases. Another covers the fluidization technique for gasification of fluids and solid fuel using temperatures higher than those now used in the oil industry.

Still other projects include the production of gas by the catalytic cracking of hydrocarbons and the use of heavy oils to produce high B.t.u. gas. Much of this work is being done at the Institute of Gas Technology and other scientific and educational institutions throughout the country.

In the domestic gas field, a greatly enlarged research program has been under way to secure fundamental data for the improvement of gas ranges, water heaters, house heating and air-conditioning equipment and other appliances. Individual studies ranged from oven performance and kitchen ventilation and dehumidification through improved ignition, temperature control, heat transfer, summer-winter air-conditioning and projected new household heat applications.

Industrial and commercial and general technical research also have been accelerated. Projects under way include improved metallurgical and ceramic heating processes, high temperature furnace designs, commercial refrigeration and improved heat applications to contemporary commercial appliances. General technical research covers such subjects as hydrates in pipelines, pipe coatings and corrosion, organic sulfur removal and storage of natural gas as a hydrate.

Advertising and Promotion

A. G. A. promotional work during 1947 including national advertising, special promotion activities, residential and commercial sectional activities and publicity, was carried on at a cost of more than one and one-quarter million dollars. These activities supplemented

and augmented those of the gas utility companies which in a normal year spend about \$25 million, and those of appliance manufacturers which represent an additional \$10 million.

Greatest single activity was a nationwide coordinated drive to sell automatic gas cooking. Late in September the Association launched its twelfth consecutive year of national advertising with a campaign unique in trade association promotion in that modern automatic gas ranges were advertised by their specific brand names.

Joining the Association's \$800,000 program are 13 manufacturers of automatic gas ranges who have increased their own use of national and local advertising by more than 300 percent over 1946. The entire program is projected into 1948 and represents an annual anticipated expenditure in excess of \$4 million, approximately 60 percent of which will be spent for newspaper advertising by gas companies, manufacturers and dealers.

Identical Themes

All three segments of the gas industry—A. G. A., gas companies and gas range manufacturers—are promoting identical advertising themes based on points disclosed by a recently conducted national public opinion poll. Objective of the 12-months' drive is to inform the public that today's automatic gas ranges possess all the qualities which women desire in new cooking appliances.

Coincident with this campaign, the Association is continuing its advertising of the growing use of gas fuel for industrial and commercial purposes. This special advertising has appeared in the trade and technical press for the last 21 years.

Many other promotional activities have been undertaken as a result of the gas industry's stepped-up cooperative program. These include an outstanding sound-color motion picture on automatic gas ranges, a commercial cooking program, New Freedom Gas Kitchen promotion, architects' gas service guides, picture story books, participation in national expositions, home service booklets, range and laundry manuals for consumers and teachers.

The New Freedom Gas Kitchen Program, which has stimulated local gas

utility kitchen planning service throughout the country, has now reached an advanced merchandising stage. As a result, the many cooperating utilities are now certifying New Freedom Gas Kitchens installed by local builders.

Industrial and Commercial Gas

A number of developments in the industrial and commercial field are materially reducing the time of operation for different heating processes. For example, high-speed direct heating of metals for surface hardening and other heat-treating operations is now done in two to five minutes compared with 30 to 40 minutes previously. Equipment interpreting these faster heating operations is being placed in operation in factories and mills in all parts of the country.

One development of interest was the completion by A. G. A. of an advanced research project in heat treating under vacuum which may ultimately result in replacement of conventional furnace atmospheres. A technical bulletin reporting the results has attracted considerable attention by metallurgists and heat treaters.

The automotive industry, which is noted for its advanced engineering, has set the pace in applying recent industrial gas engineering improvements. During the year equipment for baking synthetic automobile body finishes using direct gas heat and ingenious recirculation methods has been advanced beyond any past applications.

In the steel industry these gas atmospheres carry the complete responsibility for the bright annealing of sheets and coils. Charges up to one million pounds of mirror bright steel in a single furnace give best evidence of the dependence which the steel industry places on these machines and on gas service. Developments in the nitrogen atmosphere, using industrial gas as the medium for generating this nitrogen, have demonstrated such advantages in tin-coated strip that there is every evidence it may have universal acceptance by food processors for their tin containers.

Noteworthy in the commercial cooking field was the striking acceptance last year of stainless steel and other bright metals in heavy duty gas ranges, broilers, bake ovens and other commercial gas applications. Production of such

equipment increased to the point where manufacturers were making fairly prompt deliveries.

Commercial gas sales were stimulated by the Association's promotional program which included the preparation of sales material and direct participation in local and regional programs throughout the country. Further impetus was given to both commercial and industrial utilization of gas by two A. G. A.-sponsored gas schools which were attended by utility and manufacturer representatives from 27 states, Canada and other countries.

Technical Developments

Gas production, chemical, distribution and motor vehicle operating practices of utilities were reviewed periodically during the year at A. G. A., regional and state association meetings, thus keeping the industry's personnel abreast of latest developments. These were augmented by the publication of much valuable data in the form of engineering handbooks, manuals, safe practice pamphlets and other material.

Modern scientific progress in other industries was utilized in the operating practice of many gas companies. For example, television entered the utility field when a large eastern company installed a sight-transmitting system for the close observation of operations in other parts of the plant.

Mobile radio installations for prompt communication in emergencies and for improving gas service generally found an increasingly wider acceptance in the gas industry. This type of equipment has made rapid strides in the past three years. Gas and electric utility users since 1944 have increased from 50 to 400 and transmitters in use have jumped from

800 to 10,000. At the end of the year the industry was participating in public hearings in an attempt to prevent the impairment of its radio channels by other industries of far less public importance.

The manufactured gas industry, which has long relied on two different mechanical water gas generators, now has a third type which may be instrumental in lifting gas outputs.

Great progress in heavy duty engine design was noted during the year just closed. One design improvement of natural gas engines cut fuel consumption 15 percent under previous figures and at the same time increased horsepower output by ten percent. Another design development involving gas-Diesel engines brought fuel savings ranging from ten to 40 percent to such fields as power plants and other industrial operations. The increased use of natural gas turbine engines was also noted.

An improved-type gas flow meter made its bow and a high pressure gas transmission line was selected for the first experimental installation in the United States placing a magnesium ribbon alongside a gas line to protect steel pipe from underground corrosion. The latter installation is expected to prevent for ten years the formation of galvanic cell corrosion.

No account of the gas industry's progress would be complete without reference to the exceptional unity of thought and action which have characterized the entire field in 1947. In no small measure, this cooperative spirit and enterprise have set a pattern of accomplishment which augurs well for continued success. Standing at the peak of its service to the nation, the gas industry looks ahead to even greater achievements in 1948.

CERTIFICATION PROGRAM

(Continued from page 7)

for certification: scientific planning; automatic gas cooking; automatic gas refrigeration, and automatic gas water heating sized to take care of all household needs.

Issuance of a certificate for new or remodelled kitchens which meet these

requirements gives builders and architects who receive it the indorsement of a national association identified as one of the foremost proponents of modernity in living. The certificate gives to the home-owner the indorsement value of nationally advertised names in the gas appliance field which customers today are demanding.

A. G. A. will issue certificates to

architects and builders upon recommendation of authorized persons in local gas utility companies. They are issued by street and number so that blanket indorsement is not given that might lead to later abuse. The program is not intended to rescue shoddy construction projects, but represents the best that the gas industry can offer to the consumer in the way of a buying guide.

The program offers the architect opportunity to consult with gas company specialists trained in good kitchen arrangement and also the ability to capitalize on the millions of dollars spent on national advertising featuring New Freedom Gas Kitchens, thus lending authority to his judgment.

To builders the program offers extra merchandising facilities. There are only two rooms in the house which the builder can show completely furnished—the bathroom and the kitchen. With a certificate to prove that the kitchen has been indorsed by a national authority, the burden of selling this kitchen is lightened, making for quicker turnover and greater profit per dollar invested. By inference, customers are assured that builders who have exercised good judgment in selecting kitchen appliances certainly have exercised similar good judgment in the materials in the rest of the house. A *Certified New Freedom Gas Kitchen* gives distinction to the builder's handiwork.

Dealers and bankers will be aided by the program. People visiting new homes for ideas will see nationally advertised, automatic appliances, creating a desire for similar appliances for their own homes. Since the new appliances are written into the original mortgage for new homes thus equipped, banks are assured of greater satisfaction on the part of the homeowner and consequently increased protection on loan repayment.

The Certified New Freedom Kitchen Program already has gained favor among architects and builders. Although the program was officially initiated only a month ago, certificates have been issued in Grand Rapids, Detroit, Minneapolis, Montgomery, Ala., and Great Falls, Montana. Cooperative efforts of gas utility companies with architects, builders, bankers, dealers and manufacturers will give added impetus to the program as home building increases throughout the nation.

METALS COMMITTEE

(Continued from page 37)

ity of modern gas and electrical equipment, more attention will be focused on this field.

An allied suggestion was made that an information letter should include information on slow forging, including handling before and after, as this process is due for modernization away from the ancient slot type hand furnace forge. Since fundamental shop practice is due for a change, it might be timely, opinion indicated, to consider all aspects of forging.

Sintering of powdered metals, another subject of vital interest to industrial gas men, was reported on at length by H. Koester, Jr., for W. Wirt Young, chairman, Non Ferrous Subcommittee.

Discussion showed that gas is not getting its share of powdered metal business, yet adequate gas equipment is made to handle any and all types of powdered metal sintering and do the job better than any competing fuel.



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Personnel Service

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Graduate Chemical Engineer—22 years Gas Industry experience. W. G. "plant operation, State Utility Commission engineer, budget estimating—gas sales and requirements, marketing load studies, gas utilization and meter testing research, space heating as hobby. Qualified for administrative or managerial position. 5 years in Army with administrative duties. Prefer Midwest. 1557.

Engineer, Supervisor—Graduate engineer with long and well-rounded supervisory experience in the gas industry. Design of production and handling plants, gas surveys, studies, etc. Supervision of coal and water gas production plants. Distribution operation and construction. Appraisals and property records of plants and distribution. 1558.

Manager-Engineer—Broad training and experience in the operation of carburetted water gas properties, with both high and low pressure distribution. Experience also includes sales and commercial activities. College graduate with technical degree. 1559.

Chemical Engineer—June 1947 graduate; former 3rd Assistant, steam and diesel, Marine Engineer, seeks an opportunity. Good grounding in fuels and thermodynamics. Prefer East. 1560.

Operating Engineer thoroughly familiar with all phases of Water Gas, Oil Gas and Butane-air production and distribution. Technical education (Graduate Engineer) and 27 years unusually broad experience. 1561.

A man 39 whose proven past record in the sale of Gas Appliances and General Management can be valuable to your organization. Has had a thorough training in the Gas Utility Field. Management experience in Coal and Water Gas Utility, also Propane Air Operation. Married; employed; best of references. 1562.

Accountant, office manager, tax accountant or budget controller with 23 years of experience in the public utility field. 14 years with a natural gas utility and 9 years with an electric utility. Will go anywhere. Available immediately; married. (43) 1563.

Accountant—Diversified experience, with public accounting, public utility and manufacturing concerns and Government service, in accounting, auditing, preparation of financial, statistical and tax reports, organization and management work desires position. 1564.

Sales Manager wishes to make change due to illness in the family. More than 20 years' experience in Natural, Manufactured and L.P. gases. Have organized both large and small sales forces. National recognition in meeting electric competition and creating dealer cooperation. Directed public relations program. 1565.

Chief Engineer. Extensive metal fabrication and home appliance background including water heaters. Accustomed to full responsibility in large scale operations. Have handled all product, plant, and industrial engineering. Capable administrator and strongly cost minded. Only interested in top flight job with progressive company. 1566.

POSITIONS OPEN

Service Manager—experienced in handling installation and service work and personnel—accept full responsibility of department and its efficient operation. Our personnel have been informed of this advertisement. Write, giving experience and other details. 0510.

Gas Plant Superintendent required to work in Central America in gas plant manufacturing approximately 1,000,000 cu. ft. gas per day. Man engaged for this position would have to take full responsibility of operation and maintenance of gas plant and distribution system. Salary open. State education, experience, age, and salary desired. 0511.

Working-manager for small Propane-Air gas property in Pennsylvania with fringe bottled gas territory. Ability to sell important. Write giving experience in detail and salary expected. 0512.

Gas Utilization Engineer: Experienced in promotional work with commercial and industrial customers. Excellent opportunity with well established utility located in the South which now distributes manufactured gas and has expectations of natural gas. 0513.

Chemical or Gas Engineers, with gas plant operating experience or pilot plant experience, are wanted for development work on the pilot plant scale production of synthesis gas from coal by a new process. Unusual opportunity to get on the ground floor in a new line of manufacture promising considerable future. Location in East. High earnings for qualified men. Five weeks' paid vacation per year. State minimum salary. Submit complete personal data and references. 0514.

Process engineer with degree in Chemical Engineering. Must have working knowledge of natural gasoline plants, refineries and chemical processes. Salary commensurate with experience and ability. Position offers unlimited opportunity in young, progressive company. Please furnish references and full particulars regarding your education, qualifications and other personal data necessary for proper appraisal. Our employees have been informed of this advertisement. 0515.

Pipeline Engineer with Engineering degree. Previous experience of from five to ten years in gas pipeline design construction or operations; must know design of pipelines in compressor stations. Salary commensurate with experience and ability. Position offers unlimited opportunity in young, progressive company. Please furnish references and full particulars regarding education, qualifications and other personal data necessary for proper appraisal. Our employees have been informed of this advertisement. 0516.

Sales Manager for Manufactured Gas Utility in South East serving 24,000 customers. Must be fully acquainted with merchandising and dealer cooperation policies. 0517.

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